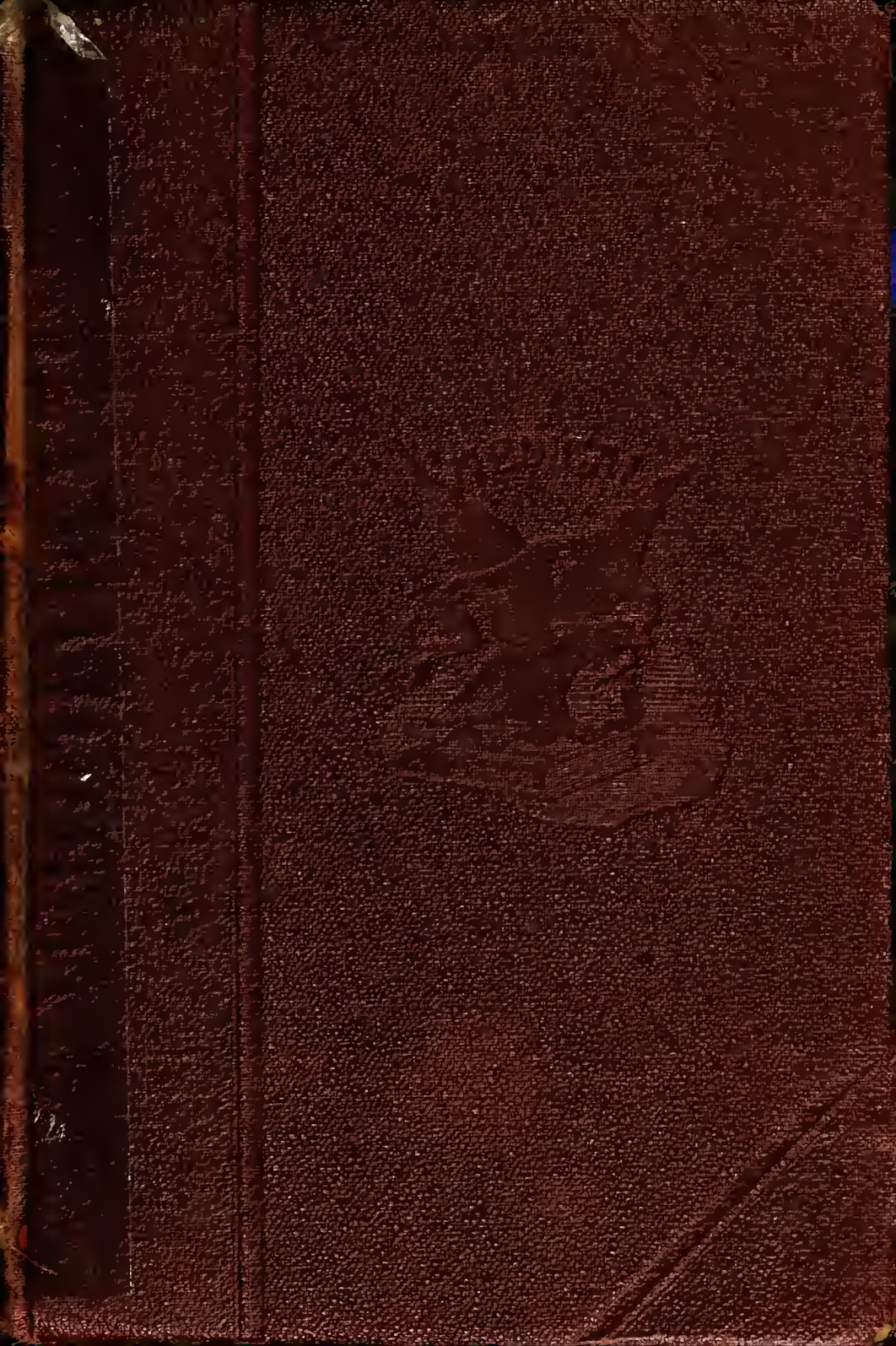

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A

PRACTICAL TREATISE

ON

NERVOUS EXHAUSTION

(NEURASTHENIA),

ITS

Symptoms, Nature, Sequences, Treatment.

BY

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EDITED, WITH NOTES AND ADDITIONS,

BY

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PREFACE TO THE FIFTH EDITION.

It has been well said that "theory originally fashioned science out of facts, and is the indispensable precondition of every important scientific advance."

Many of the most useful and practical inventions and aids to material progress owe their initiation to theoretical considerations which to this day remain unproved, and yet, as working hypotheses, were absolutely indispensable to scientific advancement. The neuron theory, if true, will necessitate a radical revision of the physiology of nervous activity. Even if not susceptible of proof, it is, at least, a good working hypothesis; and, therefore, in issuing a fifth edition of this work, I have thought it well to add a chapter devoted to this interesting and important topic.

A. D. Rockwell,

616 Madison Avenue.
New York, January, 1905.

EDITOR'S PREFACE.

NEURASTHENIA is now almost a household word, and, equally with the term malaria, affords to the profession a convenient refuge when perplexed at the recital of a multitude of symptoms seemingly without logical connection or adequate cause. The diagnosis of neurasthenia, moreover, is often as satisfactory to the patient as it is easy to the physician, and by no means helps to reduce the number who have been duly certified to as neurasthenic, and who ever after, with an air too conscious to be concealed, allude to themselves as the victims of nervous exhaustion. The doctrine to be taught and strongly enforced is that many of these patients are not neurasthenic, and under hardly any conceivable circumstance could they become neurasthenic. They do not belong to the type out of which neurasthenia is born, either mentally or physically.

Many of them are unintellectual, phlegmatic, and intolerably indolent, and are pleased at a diagnosis which touches the nerves rather than the stomach, bowels, and liver. Instead, therefore, of rest, quiet, and soothing draughts, they need mental and physical activity, less rather than more food, depletion rather than repletion.

These patients are lithæmic and not neurasthenic,

The nervous system is strong enough, and would give no trouble were it not poisoned by the abnormal products of digestion that enter the blood and circulate freely through every tissue of the body. Now, while protesting against the too indiscriminate diagnosis of neurasthenia, I would by no means have it understood that I am not a firm believer in the propriety of classifying under this head that great family of symptoms which the late Dr. Beard was the first to distinctly formulate and label. In many cases it is true, the neurotic and the hepatic types are so combined in the same individual as to give rise to the expressive term neurasthenic lithæmia, but in other cases, the symptoms, while in many respects similar, depend upon entirely different causes, and justify a distinct nomenclature. Dr. Beard quite overlooked this important point in the present work, although in "Sexual Neurasthenia," the MSS. of which he left unfinished, but which I completed and edited some years ago, the subject is simply alluded to.

In reissuing this book I have, besides various other additions, called attention to some of the differential points of diagnosis between neurasthenia and that functional disturbance of the digestive system that we term lithæmia, two conditions demanding methods of treatment radically diverse.

The editor's notes and additions are indicated by brackets [ ], pages 85 to 87; 138 to 146; 207 to 212; 236 to 238 and sundry foot notes. A. D. ROCKWELL.

PREFACE.

In this country nervous exhaustion (neurasthenia) is more common than any other form of nervous disease. With the various neuroses to which it is allied, and to which it leads, it constitutes a family of functional disorders that are of comparatively recent development, and that abound especially in the northern and eastern part of the United States.

In spite of its frequency and importance, neurasthenia, although long recognized, in a vague way, among the people and the profession under such terms as "general debility," "nervous prostration," "nervous debility," "nervous asthenia," "spinal weakness," and, more accurately, by some of its special symptoms and accompaniments, as "spinal irritation," "nervous dyspepsia," "oxaluria," cerebral and spinal anæmia and hyperæmia, is even now but just beginning to find recognition in the literature of nervous diseases. It is at once the most frequent, most interesting, and most neglected nervous disease of modern times.

Among specialists and general practitioners alike, there has been, on this whole subject, a fearful and wondrous confusion of ideas. These functiona lnervous symptoms have, in short, always slipped from our

grasp whenever we have attempted to seize them and bring them into science; and in discouragement and disgust, and in a spirit of skepticism, which is the highest form of credulity, physicians, imitating the unscientific example of the laity, have denied the existence of such symptoms, just as they formerly denied the existence of diphtheria and hay fever. Neurasthenia, indeed, has been the Central Africa of medicine —an unexplored territory into which few men enter, and those few have been compelled to bring reports that have been neither credited nor comprehended.

The present work is the result of the experience and study of my entire professional life in the subject to which it relates.

The term neurasthenia (nervous exhaustion) is of Greek derivation [νεῦρον nerve, α privative, and σθενος strength], and literally interpreted means lack of nerve strength.

My first paper on this subject, based on the study of thirty cases, was prepared in 1868, was read before the New York Medical Journal Association, and was published in the *Boston Medical and Surgical Journal*, April 29th, 1869, and subsequently appeared in the first edition of Beard and Rockwell's "Electricity." This was, so far as I know, the first systematic treatise on neurasthenia ever published.

At first the subject excited absolutely no interest in the profession of this country.

In Europe the effect was somewhat different. In England, Dr. Hugh Campbell shortly after published

a work on Nervous Exhaustion, largely, if not entirely, based on my writings on that subject, and containing little additional matter; it was clear that, although interested in this functional nervous disease, his opportunities for observation had not been abundant, and that he was not fully capable of analyzing and formulating his own material. In England, his work has passed through many editions. In Germany, however, where the above-mentioned work on Electricity became widely known through the translation of Väter, of the University of Prague, that section of it devoted to neurasthenia met, for the first time, with a criticism and comment at once sympathetic, intelligent, and scientific.

In the volume of Ziemssen's "Cyclopædia" that treats of diseases of the spinal cord, which was prepared by Professor Erb, of Heidelberg, one of the very ablest of the German neurologists, and one of the most original and philosophical of recent medical writers, is found a chapter on spinal exhaustion, wherein he not only confirms the description and analysis and nomenclature of neurasthenia which I gave several years ago, but adds some judicious and valuable observations of his own. Erb, after giving a correct analysis, in a very general way, of some of the more prominent symptoms of this disease, details a typical case, and observes that he has seen over two dozen similar cases. This observation is of value as showing that this malady is not confined to the United States, where it was first systematically described, and where it is certainly far

more common than in all the world besides, and that the symptoms, behavior, and clinical history are the same in both countries. At the time when my first article on this subject was prepared (1868), I used the general term *neurasthenia* to cover all forms and types of nervous exhaustion, the symptoms coming from the brain and from the spinal cord being described together and indiscriminately. This imperfection Professor Erb has repeated, and, to that extent, the value of his essay is impaired, since, in strictness, the disease neurasthenia should appear both in the volume on the brain and on the spinal cord, in the former as *cerebrasthenia*, or exhaustion of the brain, in the latter as *myelasthenia*, or exhaustion of the spinal cord. It is this latter form, or *myelasthenia*, that Erb attempts to describe in his volume under the term *neurasthenia spinalis;* but of necessity many of the symptoms connected with the brain are included in his description.

Erb makes the further mistake, but one in which he is sustained by a large body of writers on the nervous system, of treating of spinal irritation as a separate and special disease instead of one of the many symptoms of myelasthenia, or spinal exhaustion, which it really is; and he further overlooks the existence of cerebral irritation, which is just as real, though not quite so frequent as spinal irritation; and he evidently fails to recognize the fact that the general irritation or tenderness of the whole body, to which he gives the name hyperæsthesia, is in scientific analysis a condition to be accounted for just as much as spinal irritation.

Many important symptoms he does not mention, and no attempt is made to explain in detail the diagnosis, pathology, or rationale of the disease. It is due, however, to Professor Erb to say that he evidently suspects the justness of his analysis, and in one place clearly intimates that he has doubts whether spinal irritation should be considered as a distinct disease; and he confesses that it is impossible to draw the lines between spinal exhaustion and spinal irritation.[1]

So far as I know, none of the recent standard works on nervous diseases, in any language, have any chapter on neurasthenia, with the exception of that of Erb, above noted, and the *Maladies du Systéme Nerveux* (Paris, 1879), by Dr. J. Grasset, Professor in the Faculty of Medicine, Montpellier, France; and "Diseases of the Nervous System,"[2] by Rosenthal, of Vienna.

Prof. Grasset, however, unlike Erb, makes no addition to our knowledge of neurasthenia, but simply epitomizes the facts and reasonings of my earlier essay. In attempting to point out the relation of neurasthenia to the special symptom, spinal irritation, he falls into the same confusion as Erb, without apparently suspecting that confusion. Under the general heading Spinal Irritation, various phases of neuralgia, "cerebro-cardiac neuropathia" and agoraphobia—fear

[1] During the past summer I had the pleasure of meeting Prof. Erb in Heidelberg, and of conversing with him in some detail on this subject. He stated that his experience with neurasthenia had much widened since the publication of his chapter in the Cyclopædia. In most respects I believe he would accept the criticisms and suggestions above offered.

[2] This work has been translated by Dr. Putzel, of New York.

of open places—are promiscuously gathered. Dr. Julius Althaus, of London, in the third edition of his work on Electricity (1873), has a short chapter on "Spinal Exhaustion," among the symptoms of which he mentions "nervousness, impaired digestion, and increased elimination of urea;" and cites two or three cases, giving the results of electrical treatment.

April 4th, 1878, I read before the New York Academy of Medicine a paper on certain symptoms of nervous exhaustion, designed to be supplementary to the original paper on neurasthenia, prepared ten years before, describing a number of new symptoms, or those but partially noticed heretofore, and yet further differentiating the disease. This paper, which was based on a study of several hundred cases of neurasthenia, in its different forms and phases, was subsequently published in the *Virginia Medical Monthly* for June, 1878. Since that time, I have continued the discussion of the subject in a number of papers, delivered before the scientific societies of New York and vicinity, before the American Neurological and American Medical Associations, the New York Neurological Society, and in a lecture before the Baltimore Medical and Surgical Society. These papers have been published in the various medical journals.

Although the first systematic indorsement and confirmation of what had been written on neurasthenia was obtained in Germany, yet these later writings have both awakened interest and inspired activity, on the part of scientific men in this country, so that already

we have a number of independent workers in the same field, among whom are to be mentioned Drs. Jewell, Mitchell, and Goodell, who have made, and are still making, thoughtful and suggestive contributions to this subject.

In England, Mr. Jonathan Hutchinson,[1] approaching this subject from the side of ophthalmology, has by his own observations confirmed, though not in a systematic form, some of the facts and reasonings of this treatise.

It would, therefore, appear that the general doctrines taught in this work have already passed the test which every claim in science must meet—verification by a number of experts in the branch to which it belongs, and that the time has come to present the subject in a permanent form.

Although neurasthenia had not been systematically studied, yet that there was a morbid condition of the nervous system, for which the ordinary names and descriptions of the books would not suffice, had been suggested by various writers.

Thus, Dr. Flint, in the first edition to his work on "Practice," devotes a page to what he calls "nervous asthenia," acknowledging the indebtedness for that term to Dr. Fordyce Barker. Dr. Flint defines the disease as "functional debility, induced by excessive and unduly prolonged activity of the brain functions." In spite of the imperfections of this definition, which

[1] See the London *Medical Times and Gazette*, June 21st and August 23d, 1879.

by no means covers the facts of neurasthenia, Dr. Flint's few sentences on this subject are, so far as they go, scientific, suggestive, and verifiable, and those who are interested would do well to refer to them. He states, for example, that it occurs without anæmia, that it is especially frequent in this country, and in cities. In regard to the special symptoms, the differential diagnosis, or the treatment, he says but little, and concludes that "a full consideration of nervous asthenia would require much more space than can be accorded to it in this work."

In his last work on "Clinical Medicine," the author repeats substantially the views of the earlier treatise, and adopts the term neurasthenia. In the older editions of Dunglison's Medical Dictionary the word neurasthenia appears.

Dr. Jewell, of Chicago, in a series of lectures on neurasthenia, now being published in the *Journal of Nervous Disease*, refers to the following terms that have been employed by writers:—*Nervosime* (Bouchut); *état nerveux* (Sandras and Bourgignon); *nervopathie proteiforme* (Cerise); *nervospasmie* (Brachet); *nerven-erethismus* (Henle); *neurœmie* (Laycock).

Benjamin M. Richardson, of London, in his valuable treatise on the "Diseases of Modern Life," also refers to some of the symptoms of neurasthenia, such as irritable heart, and roaring in the ears, and hopelessness; taking, however, a more pessimistic view of such symptoms than is consistent with the facts as observed in the majority of the cases.

The propriety of publishing these researches is yet further inculcated by the consideration of the very important progress that has been made in the treatment of neurasthenia and allied affections, especially during the last decade—cases which formerly were allowed to suffer for years, and perhaps to develop special and more serious diseases, are now, with our more abundant remedies, and, more than all, with our better knowledge of the dosage and action of remedies, and of the laws of their combination, speedily relieved, and, in time, substantially cured. In no department of therapeutics has there been, even in this most active age, so rapid and so useful an advance as in the management of nervous exhaustion, and the diseases that result from and are related to it; and hence a subject the interest of which was originally and mainly scientific and philosophic, is now of direct and practical and personal concern, not only to specialists in the diseases of the nervous system, but to practitioners, and to sufferers everywhere.

To describe with thoroughness, if not exhaustively, the symptoms of neurasthenia—those hitherto assigned to the other affections, or regarded as special and distinct diseases themselves; to show their relations and interdependence; to distinguish them from the often times closely resembling symptoms of organic disease on the one hand and the symptoms of hysteria and hypochondria on the other hand; to unify and harmonize the complex developments and manifestations of this malady; to indicate its pathology and rationale,

and trace out in detail its prognosis, sequences, treatment, and hygiene—this is the task I have undertaken in the present volume.

In regard to the nomenclature adopted in this work, this may, perhaps be admitted, that it is at first annoying and apparently unnecessary to introduce new terms for even frequently occurring symptoms. At the beginning, however, I may say that the nomenclature is the least important part of the subject, and the one that is the least insisted upon. It is the fact—the idea —the truth behind the nomenclature that demands our attention. Names, however, are necessary in science; simply, if for no other reason, for the sake of economy of time and labor in expressing thought; and where a subject is much discussed, this matter of economy becomes a matter of not a little consideration. The literature of ophthalmology has a very extensive nomenclature, which has been made necessary by the advances of science in that direction, and by which communication and converse among ophthalmologists are made easier. New terms are necessary to new sciences, although it is not necessary that all persons should remember them, or try to bear them in mind. so long as they understand the conditions which they are designed to express.

In devising new nomenclature, certain liberties are allowed when anything is thereby gained for brevity or euphony. Cerebrasthenia, derived from a Latin and a Greek word, is preferable to encephalasthenia, which would be the term if made up purely from

Greek. In naming the morbid fears, certain elisions and abbreviations are required in order to simplify and shorten the words, which at best are unpleasantly long. There is a proper repugnance to new terms which can only be met by showing their necessity or convenience, or by making them as brief and as euphonious as possible.

It is designed that this work shall be exclusively practical, and for that reason the causes of neurasthenia here receive no consideration. In a work on American Nervousness which is now in preparation and nearly completed, and which will be, in a measure, supplementary to the present treatise, it is expected to supply this want and discuss both the causes and the consequences of the rise and increase in modern times, not only of neurasthenia, but of the general nerve-sensitiveness of which neurasthenia, with all its vast array of symptoms and sequences, is but a result and expression. A philosophic and thorough analysis of American nervousness must be a contribution to sociology of which it is a part, and will require a discussion of many questions of race, of climate, of institutions, and of social customs, that, however interesting they may be to the general reader and inquirer, and however important for a full and strictly scientific apprehension of all sides of our theme, are of less immediate concern to the physician or the patient than a knowledge of the symptoms, the diagnosis, the sequences, and the treatment of neurasthenia. What

practical physicians above all things want is, to have a book which should be as a mirror held up before disease and reflecting the symptoms and history, not as they logically might be or ought to be, or are supposed to be, but as they are in actual experience. This ideal the present work aims to fulfill.

From the beginning of my study of the subject, especially of late years, I have been called upon to diagnosticate and to carry out the details of treatment for cases of neurasthenia among very many of the members of my own profession, students of medicine, and men of science; with many of these cases it has been one of the means of cure to have them study in a scientific way—through the intellect rather than through the emotions—not only their own experience, but the general subject in its various relations. Some of these professional patients have been men of large practical experience, superior skill, and high authority in their respective departments, from whose general observations and suggestions and special co-operation as experts I have derived incalculable benefit, which, as it is hoped, this contribution to the scientific study of neurasthenia may partially repay.

G. M. B.

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NERVOUS EXHAUSTION.

(NEURASTHENIA.)

CHAPTER I.

INTRODUCTION.

WHY THE STUDY OF NEURASTHENIA HAS BEEN NEGLECTED.

THERE is a large family of functional nervous disorders that are increasingly frequent among the in-door classes of civilized countries, and that are especially frequent in the northern and eastern parts of the United States, but of which our standard works of medicine and our lecture-rooms give little or no information.

The sufferers from these maladies are counted in this country by thousands and hundreds of thousands; in all the Northern and Eastern States they are found in nearly every brain-working household; and yet one might graduate at all of our colleges, read all of our most-used medical treatises, and converse with the majority of our ablest practitioners, without obtaining any just ideas in regard to the nature or treatment of these maladies. Even when these affections are treated of at all, it is, as a rule, one-sidedly, partially, and erroneously. Thus, neurasthenia is confounded

with general anæmia; cerebrasthenia (exhaustion of the brain) is assigned to cerebral anæmia or hyperæmia. Myelasthenia (exhaustion of the spinal cord) or spinal irritation is confounded with spondylitis or spinal congestion, or is attributed to mere circulatory irregularities, as anæmia or hyperæmia; sick headache is regarded as a disease of the stomach, and treated with antacids and purgatives; physical hysteria is stigmatized as a malady of the imagination; hay fever is supposed to be parasitic or infectious; inebriety is mistaken for drunkenness; while cerebral irritation and the different varieties of morbid fear are not mentioned at all.

Conversing on the subject, not long since, with a very intelligent interne of one of our largest hospitals, I found that neither in the medical school nor in the hospital had he received any suggestions relating to any of these functional diseases of the nervous system, although, if he should ever engage in private practice among the better classes of any of our larger cities, he will meet these diseases every day and every hour, and his success will depend to a considerable extent on his skill in managing them.

These disorders are transmissible oftentimes, taking the place of each other. They run in families more demonstrably than scrofula, or cancer, or consumption. Indeed, one great cause of the rapid increase of these disorders during the first quarter of the century has been inheritance. It is not difficult to find families in which all these diseases are represented; and there are individuals who at different times, or at the same time, suffer from all or nearly all of them.

I have said that in Europe these affections are but little known; but, in liability to them, all the European countries are not alike. They appear to be least common in Germany and Russia, Italy and Spain;

considerably more frequent in France, and more frequent still in England.

Although these difficulties are not directly fatal, and so do not appear in the mortality tables; although, on the contrary, they may tend to prolong life and to protect the system against febrile and inflammatory diseases, yet the amount of suffering that they cause is enormous. Volumes are written on typhoid and other fevers; but in this country these neuroses, although not fatal, cause more distress and annoyance than all forms of fever combined, excepting perhaps those of a malarious origin. Fevers kill, it is true, while these neuroses do not; but to many death is by no means the most disagreeable of the many symptoms of disease. A cyclopædia of medicine, adapted to the wants of the practitioner in the northern and eastern parts of this country, should contain a full volume devoted to these diseases; and yet, so blind is our deference to Europe, so fearful are we of making our own independent, original observations of the maladies peculiar to this land, and so completely are we tethered to hospital and dispensary experience, that up to the present time there is no monograph even on these diseases, and all attempts to study them, or to diffuse a knowledge in regard to them, are met, or have until recently been met, at every step with inappreciation or positive opposition.

These diseases I bring into one family, because they have a common pathology, a common prognosis, a common history, and a common treatment. They all occur under similar conditions, and in similar temperaments. They are all diseases of civilization, and of modern civilization, and mainly of the nineteenth century, and of the United States. They are to be distinguished from certain other nervous diseases, as

epilepsy, and psychical or mental hysteria, and especially are they to be distinguished from unquestioned structural or congestive diseases, such as locomotor ataxy, progressive muscular atrophy, tetanus, and apoplexy, all of which diseases are probably thousands of years old, are not restricted to civilization, though more frequent in civilized countries, and are as common in Europe as in America, if not more so. These organic or structural nervous diseases also occur chiefly in the strong or comparatively strong; they are not diseases of nervous debility, and abound more among the muscle-working than among the brain-working classes.

The centre and type of this family of functional nervous diseases is neurasthenia, or nervous exhaustion. To understand this disease is, therefore, to be prepared to understand all the members of the family to which it belongs. For this reason it is that to the study of neurasthenia in its varied forms and phases this work is devoted.

Why is it that this important field of science has been so little studied? Why has a disease which is more frequent than any other nervous disease, indeed may be regarded as the king of the neuroses, succeeded so successfully in escaping the attention of men of science? The answer to this query is somewhat complex:

First of all, the symptoms of neurasthenia are largely of a *subjective* character, and to one who does not suffer them, appear trifling and unreal; many of them do not appeal directly to the senses of the scientific observer: the physician can only know of their existence through the statements of the patient, or through his conduct. Unlike the existence of surgical and acute and inflammatory diseases, the phenomena of which the physician can see and feel, and for the study of

which he is little, if at all, dependent on the patient's intelligence or honesty, they do not appeal directly to the eye or ear or touch, and are in fact quite out of the range of all modern appliances to suplement the defects of the senses, as the ophthalmoscope and laryngoscope, or even the spectroscope. It is the tendency of the partially trained mind everywhere to reject or doubt what cannot be confirmed by the eyes or ears; forgetting that the capacities of the five senses of man are so meagre that they practically shut him out from nature; forgetting that the great natural forces, as light, heat, electricity, magnetism, gravity, are quite beyond the reach of any one of the senses, or all of them combined, scientific men have allowed themselves to ignore and despise some of the most remarkable, interesting, and instructive phenomena of the nervous system both in health and disease, for the only reasons that they cannot be seen and heard and felt.[1]

Then again, many of these indefinite symptoms of neurasthenia, considered alone and by themselves, are so small, and feeble, and unimportant to those who do

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[1] Dr. Jewell, in a recent lecture, remarks as follows:

"In the physical science of to-day, there is clearly too little dependence on, because there is so much ignorance of, the nature and conditions of inference. It is almost habitually placed at a disadvantage as compared with direct sense, observation, and physical demonstration. But this arises out of wrong conceptions as to its nature and value, as well as out of an over-estimate of the dependence which we may legitimately place on the 'evidence of the senses.' From these remarks you may gather, that I am aware of the real nature of the description I am about to give, and also of the objections which a too realistic scientific spirit might raise against it as to its substantial correctness."

I may here also refer to my series of papers on the Scientific Study of Human Testimony, in the *Popular Science Monthly* (May, June, and July, 1878, and March and April, 1879), where the relations of inductive to deductive reasoning are discussed.

not understand their importance, that science passes them by and gives attention to matters incomparably less important and valuable.

Physicians who pass by these obscure phenomena of the nervous system, as unworthy of their notice, may be reminded of this, that modern science, in all of its branches, and particularly in biology, is constructed out of slight. trifling, and unnoticeable facts and phenomena of nature. Thus, the philosophy of evolution, which marks the highest achievement of the human intellect, is built up entirely of minute and apparently insignificant facts, which scientific men of past generations would have been ashamed to notice. Neurasthenia is indeed passing through, in this generation, the same history as insanity in the past. The time was when the symptoms of insanity were believed to indicate, not diseases, but the possessing of an evil spirit; so now, very many of the symptoms of neurasthenia have been regarded by men of science as imaginations of the patients, proofs of hypochondria—a vague term which, in this generation, covers all symptoms which the physician either doubts or misinterprets.

Although neurasthenia is comparatively a modern disease, although its symptoms, as herein described, are surpassingly more frequent now than in the last century, yet not a few of these symptoms have existed, particularly in this country, but more or less in all civilized countries, for at least a century and longer; and they have been brought to the attention of physicians in their practice, but they have not received their attention; the sufferers have simply been dismissed as hypochondriacs, just as with our ancestors cases of hysteria and insanity were shunned or dismissed as possessed of the devil.

A *second* cause for the neglect of this disease is, that

a successful study of it requires an exercise of the reasoning as well as of the observing powers. Since the time of Lord Bacon, and notably during the last half century, the power of scientific observation—seeing, hearing, and feeling, and touching facts of nature—has developed with almost alarming rapidity, and the habit has even become popularized, so that individuals of but moderate powers are, in limited and narrow spheres, enabled to make original observations. It is in the powers of *reasoning* from observations, in co-ordinating the phenomena of nature, pointing out their relations, and deducing laws from the observed phenomena, that the limitation of the human brain is seen at the greatest disadvantage. To one accurate and original reasoner there can be found a thousand original and accurate observers—men who can see and hear and feel, without being able to go behind the phenomena that strike their senses, and explore through dark and devious pathways the domain of general law.

In medicine, especially in the study of the nervous system, deductive as well as inductive reasoning is needed. In order to study neurasthenia and allied diseases, such as inebriety or hysteria or hay fever, it is needful, not only to carefully observe the phenomena, but to observe large numbers of them simultaneously, and to study them in their relations to each other, and to other facts of nature, and to do all this with faculties so well disciplined and trained that there shall be no over-estimate of the relative importance of special facts, and no overlooking of any phenomena, however trifling.

The *third* cause of the neglect of neurasthenia and allied affections is, that we have depended too exclusively, in the investigation of disease, on the material found in hospitals, dispensaries. and other institutions of charity. For reasons that will be made clear in this

work, neurasthenic disorders are not found to any very great extent in charitable institutions, and are quite rare among that class for whom such institutions are organized; those, therefore, who give the bulk of their time and thought to charitable work among the abjectly poor in institutions, or even out of them, will have but little opportunity to study any of the symptoms or disorders referred to in this treatise.

Young men in their profession, who have the leisure and the power for independent observation, throw themselves into charitable work, where very many of the symptoms and phases of the disease which they will be required to combat when they enter private practice scarcely ever appear. Unmindful of the profound and just remark, attributed to a member of the English parliament, in a discussion of the problem how to relieve the poor: "Charity creates much of the miseries it relieves, but does not relieve all the misery that it creates;" oblivious also of the historical fact that very many of the noblest and most beautiful discoveries of modern medicine and surgery have been made outside of hospitals, physicians are yet taught and inspired, by every form of influence, to give their time and force to public institutions, and that, too, in a period of life when, if ever, original work is to be done.

The result of this unscientific philanthropy is that the miseries of the poor have been increased in manifold ways, and the miseries of the rich, the comfortable, and intelligent have been unstudied and unrelieved.[1]

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[1] It is proper to add that this evil of unwise and injurious charity is now becoming recognized by the profession of New York and other great cities, and that attempts have been made, though not very successfully, during the past year, to remedy the difficulty. The strong and truthful paper of Dr. Sturgis on this subject is especially worthy of note.

When our young men in science learn, as they are now beginning to learn, that much of charity is really but another term for cruelty; and that it is possible to make original contributions to science from the material obtained in private practice; that Fifth Avenue is in some features a very much better field for pathological study than Five Points; then we may expect and hope that neurasthenia, the most common, one of the most distressing, and scientifically one of the most instructive and interesting of the nervous diseases of modern times, will receive a trifle of the reflection and observation that are now bestowed on such minor maladies as ataxia and muscular atrophy, with the discussions of which our text-books and literature are oppressively burdened.

A *fourth* cause of the neglect of neurasthenia and allied diseases is, that we, in this country, where the disease most abounds, have depended so exclusively on European precedence and experience. Until quite lately, the majority of our text-books were of European origin; not only for original studies, but for compilation and text-books, we have looked to England and France and Germany. In Europe these functional nervous diseases, although they exist, yet are so rare that even specialists in diseases of the nervous system do not see them constantly, and when they see them, do not. with very few exceptions, recognize or treat them.[1]

Neurasthenia is an *American disease* in this, that it is very much more common here than in any other part of the civilized world, and here it first received its name and description; it could not be expected that

[1] Prof. Erb, of Heidelberg, tells me that in Germany, as in this country, it has been the fashion to diagnose neurasthenia as hypochondria.

European authorities would be the pioneers either in the study of its nature or treatment. Neurasthenia, indeed, like the decay of the teeth, which in some cases is really one of the symptoms of the neurasthenic tendency, was first made of special consequence in this country.

Within recent years, various statistics have been published on the subject of the disproportion of doctors of medicine to population. It is said, and truthfully, that in this country there are more physicians in proportion to the people than in any other country. These statistics have been brought up mainly by those who seek in some way to limit the graduation of doctors; but the figures have been used in such a way as to give an impression not entirely correct. The fallacy in them is this, that Americans need more doctoring than any other people; they have more illnesses of various kinds —major and minor—than any of the European nations. A hundred well-to-do families in our large cities would send for a doctor to treat them very many more times than a hundred equally conditioned families in England, France, or Germany. This fact, taken in connection with the fact that our population extends over a wide teritory, makes it possible to support a larger number of physicians than in any other country of equal population. What is true of doctors is equally true of drug stores; the meagreness of the apothecary shops strikes one immediately on visiting Europe. The Americans take very much more medicine, both prescribed and unprescribed, than Europeans; they take a larger variety, they take finer qualities; hence it is that very many of our drug stores are palaces[1]

[1] The past summer (1879) I had much difficulty in procuring from the best drug stores of London, Paris, and Brussels such remedies as bromide of sodium and citrate of caffeine, in quantities sufficient for the treatment of the sea-sick on my return voyage.

containing an immense quantity of medicinal preparations, including not only all that are used in Europe, but many that are peculiar to this country, or at least but very little known abroad.

Neurasthenic patients and neurasthenic families, even when they have no febrile and inflammatory disease, are subject to numberless symptoms of disease that invite, if they do not absolutely require, medical advice and medical treatment. They keep our physicians constantly on the alert to advise and suggest for them new remedies and modes of treatment; hence it is that the treatment of disease in this country among the leading physicians is more satisfactory in all respects than in Europe; Germany, that leads the world in science, being far behind in the art of therapeutics.

CHAPTER II.

SYMPTOMS OF NERVOUS EXHAUSTION.

THE symptoms of neurasthenia have never yet been fully described.

In my first paper on this subject, I indicated only a minority of the signs and evidences of this many-sided and fluctuating disorder, although the general philosophy of this morbid condition was precisely the same as that advocated in this volume.

The present chapter, in the form here given, is an evolution from a few independent observations, to which others have been added little by little, by successive and slowly appearing increments.

From medical literature, for reasons already given, only inconsiderable assistance could be obtained. In order to learn the nature and symptoms of this malady, it was necessary to closely study the cases by themselves, taking notes of their histories and progress, with no other guidance than that obtained from my own preceding observations of similar cases, and occasional hints from physicians with whom I saw the patients, or by whom they were referred to me.

Some of the symptoms that I shall here describe are somewhat familiar to all medical men everywhere; though usually under different headings, and without any definite relation to any definite morbid state; others are familiar only to those who give their time chiefly to the nervous system, and others still are here described for the first time.

Some of the symptoms herein detailed, when they are

mentioned at all in works on diseases of the nervous system, have been and are now referred to under such headings as cerebral anæmia or hyperæmia, or general anæmia, or hysteria, or hypochondriasis, or oxaluria; and some of them, as will be seen, are mentioned in connection with structural lesions, as ataxy and muscular atrophy, and by many are regarded as essential parts of the clinical image of these grave disorders. Neurasthenia attacks or is liable to attack all functions and organs. Hence, a description of the disorder, to be complete, must include the varied modifications that many parts and functions experience under the influence of a neurasthenic invasion.

How to Study Cases.—One reason why neurasthenia has been so long neglected is, that the symptoms are, in some instances, so subtle, illusory, and difficult of analysis and classification. One who has never seen and carefully examined a large number of cases of this disease would not believe it possible that it could manifest itself in so many different ways. The usual custom of giving an opinion in cases of this sort, after slight, partial, incomplete examinations, including very short conversations with the patient, or perhaps only with friends of the patient, never leads to good results. Both physicians and patients have for years, if not for ages, encouraged the custom of calling upon the physician for the symptoms here described, and expecting that a brief conversation, more or less, will suffice to establish a diagnosis and lay out a course of treatment. Now, as a rule, it requires more than a few minutes' conversation to make clear the diagnosis in this disorder, and the cure is not usually to be wrought by a single carelessly prepared prescription.

These symptoms of neurasthenia, cerebrasthenia, and myelasthenia, as has been stated in the introduc-

tion, do not appeal, many of them, directly to the senses; we only learn of their existence, in many cases, by close cross-examination of the patient and the patient's friends, or of the physician who brings the patient for consultation. Before entering upon a study of this class of cases, it is well to examine the principles of the evidence derived from human testimony, so as to know what to accept and what to reject; else we may be misled at every step.

Many of these cases, in a first interview with me, give a history of their life, and their disease and symptoms, in all sincerity and with very great care, which on a further examination and at subsequent interviews I have found to be not only untrue in many important respects, but even quite the reverse of the truth; while symptoms and facts which, when known, determine the diagnosis, are kept back, or altered, or denied; not usually so much through intentional deception as through forgetfulness, or perhaps through a misunderstanding or misapprehension of the purport or importance of the questions that were asked. I have had patients of high intelligence, thorough education, and good mental discipline, give me a history, at the first interview, of the nervous diseases in their family which has misled me, and was only corrected perhaps after I had seen them a number of times. In very many cases it has happened to me that patients denied that there was nervous disease in their family or even among their distant connections, when on subsequent examinations I have found there had been epilepsy, neuralgia, hysteria, sick headache, hay fever, and even insanity—or perhaps all these disorders running through many generations. I have had patients come to me with some one symptom—say sick headache or neuralgia or spinal irritation—who have said to me in

reply to questions, and also voluntarily, that in all their lives they had never suffered from any other symptom of nervous diseases than that one; whereas, on further examination, I have found that the symptoms which sent them to me was only one of a large family or army of troubles which had annoyed and followed them for years. To study these cases successfully, one must, therefore, give much time and thought, and either by correspondence or personal interview—preferably, of course, the latter—obtain accurate, and as far as possible complete, knowledge of all their symptoms, including those even the most *seemingly* trifling and unimportant, and even fanciful.

The effect of this scientific analysis of cases is not to make our patients hypochondriacal, but to remove their hypochondria. The worst enemy of the emotions is the intellect, and by getting a patient intellectually interested in his own case, by assisting him to face the enemy, we can put him in a position to understand that his troubles, serious as they may be, are not so serious as he had feared.

It is very often necessary to ascertain the condition of all or nearly all of the important organs and functions. The eyes, the ears, the spinal cord, the digestion, the reproductive organs should be inquired into with more or less detail. Many of these cases, when we see them for the first time, have passed through certain stages of the disease, symptoms which they have forgotten, and the existence of which they will deny, for the sole reason that they have forgotten them, and not from any desire to deceive us.

Experiences of this kind are most suggestive illustrations of the limitations of the human memory—a subject which I have discussed elsewhere. It is one of the blessed orderings of nature that we can and do

lose remembrance of our miseries—the physical pains and sufferings of the past, instead of accumulating like pent-up waters, pass silently away into the caverns of forgetfulness; like certain streams, of which it is said that they sink into the earth, remain quite out of sight, and appear to view only at long intervals. It is this forgetfulness of physical pain and discomfort that makes existence possible or endurable. All persons would want to die, all persons would die, if they were obliged to remember and keep before the mind at all times, or were even able to recollect all the physical sufferings of the past; but this very forgetfulness of symptoms and sickness makes it harder for the physician to diagnosticate functional nervous diseases.

Some cases of this kind illustrate this principle in a most remarkable way.

I lately cured a very remarkable case of neurasthenia complicated with astigmatism, where the patient took pains to write out and give me in detail a history of the symptoms. I treated him for a long time, saw him many times, conversed with him freely about his case, in which I felt a special interest, as he well knew, both on account of its peculiar history and the special results of the treatment, and towards the close of the treatment presented him before the American Neurological Association; but even after all that I learned from him of symptoms that he had suffered, various forms of morbid fear that he had experienced and recovered from, but which he had never before, during all the treatment, mentioned to me.

Symptoms of Nervous Exhaustion.—Exact logical order is impossible, but for convenience sake and for ease of reference, I begin with the head and brain and go downwards.

Tenderness of the Scalp (Cerebral Irritation).—This

is a phenomenon which is to the head what spinal irritation is to the spine. As in spinal irritation, the whole spine may be tender all the way from the first cervical vertebra to the coccyx; or the tenderness may be confined to the middle dorsal and middle lumbar vertebræ; so, in cerebral irritation there may be tenderness over the entire scalp, or it may be confined to the vertex, or to certain points in the forehead. Sometimes the scalp is so tender that brushing the hair causes pain; even touching the tips of the hair is disagreeable. At the vertex, the tenderness is sometimes accompanied by a feeling of heat and burning, that may be somewhat relieved by firm pressure. This cerebral tenderness, like spinal tenderness, is superficial and peripheral, not deep-seated nor central, as some have supposed. It is, in many if not in all cases, tenderness of the ramifications of the occipital and other nerves that supply the scalp, just as spinal irritation is tenderness of the superficial nerves of the bones of the spinal column.

A frequent spot of tenderness is found over the eyebrow and in the left temple. This is found in sick headache, and in connection with it there may be tenderness of the nape of the neck. A sudden jar, as when one slips in going down-stairs, may, in these cases of cerebral irritation, cause temporary pain, as though the head itself had been struck. Emotional disturbance of any sort may bring on an attack of this symptom, as also may confinement in heated rooms, or in bad air, or over mental labor. These symptoms, indeed, are not constant, but come and go according to the exciting causes. Sometimes they last but for an hour or two, or for a day or part of a day. The same is true of all analogous states, as spinal tenderness and general hyperæsthesia.

Dilated Pupils —Dilatation of the pupils is so often seen in neurasthenia that it may be considered as an important fact to be noted in the study of a case.

Abnormal activity of the pupil—sudden and frequent alternations between contraction and dilatation—is a sign of neurasthenia, or, at least, of nervous irritability, of perhaps more importance than mere dilatation, just as in organic diseases of the cord, sluggishness of the pupils, slowness to contract or dilate, has been recently suggested as a better diagnostic sign than mere contraction of one or both pupils.

Temporary inequality of the pupils—one being at times more dilated than the other—I have seen in neurasthenia. *Permanent* inequality of the pupils is a sign of organic disease; but this neurasthenic inequality is inconstant, varying with the general condition.

Sick Headache and Various Forms of Head Pains. —Sick headache is both a symptom and a safety-valve. If one must be nervous, an occasional attack of sick headache, if it be not too severe, is an excellent way for this nervousness to manifest itself, and, no doubt, saves other and worse affections. When sick headaches suddenly and permanently leave us, there may be reason to beware, though not probably in all cases. Some years ago, I had under my care, for a short time, a case of shaking palsy that had followed a sudden and apparently causeless cessation of sick headache. When sick headache leaves us as a result of improvement of the nervous system through treatment or hygiene, it is so far forth a good sign.

Like most of the symptoms of nervous exhaustion I am here describing, sick headache is experienced mostly between the ages of fifty and fifteen. Rarely, or never, do young children have it, and it usually stops before old age. It is a symptom that belongs to

the perturbable and active years, and may quickly show itself when, from any cause, the nervous system is depleted of its force.

Pain, Pressure and Heaviness in the back of the head and over the vertex and through the whole head, very commonly attend the neurasthenic state, especially when the brain is congested; but many also appear where there is no evidence of an excess of blood on the brain. Lightness of the head is also a common complaint; also a symptom usually defined as "I cannot tell how I feel."

Changes in the Expression of the Eye.—The mere expression of the eye is modified by disease in a way that it is hard to analyze or describe. In chronic nervous exhaustion from any cause or combination of causes, this expression of debility may become chronic —a permanent state that is revealed at once on meeting and addressing the sufferer. In the exhaustion that precedes death, the eye, as has been observed, sometimes protrudes far more than is natural. It is believed that this phenomenon takes place through the sympathetic.

A lady whom I once treated for numerous nerve difficulties, and who entirely recovered, told me that as she got better the whites of her eyes were of a clearer blue, and consequently, to her delight, more attractive. This fact was observed by several of her friends as well as myself. It is a matter of dispute with Darwin and others, who have written on the expression of the emotions, whether the eyeballs can or cannot express feeling independent of the lids. The affirmative view is verifiable.

Congestion of the Conjunctiva.—One of the many ways in which neurasthenia affects the eyes is, by congestion of the conjunctiva. This passive conges-

tion comes and goes, like all the other symptoms, being very bad in the morning, and almost disappearing by night, or perhaps in the course of an hour or two. I have now under care a patient in whom this symptom is a very striking one. When at its worst, he looks as though he had been drinking heavily, or as though he were suffering from a very severe cold in his eyes. The condition, or rather the tendency to the condition, is a chronic one, and increases and disappears in proportion to the improvement in his nervous system.

Disturbances of the Nerves of Special Sense.—A malady of the eye is what I may call neurasthenic asthenopia, or the irritable eye, from nervous exhaustion, not depending solely on any muscular or accommodative trouble, but mainly symptomatic, revealing nothing very satisfactory to the ophthalmoscope or other tests of modern ophthalmology, but none the less painful, distressing, and sometimes exceedingly obstinate. This disease of the eye, symptomatic of nervous exhaustion, I observed a number of years ago, but could find no formal recognition of it in the standard text-books of ophthalmology. Dr. Mathewson, in conversation on the subject, tells me that this third form of asthenopia is now, however, under various names, coming into recognition in the journals and societies devoted to diseases of the eye. For a time it was supposed that Donders had solved all the problems of asthenopia; but it is now known that there are many cases that cannot be cured by glasses. These cases are common in this country, and, Dr. Roosa tells me, were first observed by our ophthalmologists.

An attack of this neurasthenic asthenopia—which is oftentimes so severe that reading or writing or sewing are accomplished only with great pain, and the eyes are

painful and tender on pressure even when not used—may last half an hour, or three hours, or three months; and, like analogous states in other parts of the body, with which it is often accompanied, may come and go very suddenly. Sometimes there is dimness of vision. In looking at the eye when in one of these attacks, we may observe a passively venous congested state of the conjunctiva. This congestion is a result—not the cause—the effect of the nervous irritation, and comes and goes under exciting causes. Such, without question, is the pathology of cerebral irritation, of spinal irritation, of irritation of the mammæ, the ovaries and testes, and of sick headache and many other forms of neuralgia. The notion which has been advocated—that this neurasthenic asthenopia, or irritable eye, is peculiar to women, and therefore to be called uterine asthenopia, is but an adumbration of the truth; for the malady, though most common in women, like all this family of symptoms, is found in both sexes; the very worst cases I have ever seen have been in males. Several of my cases have been examined by our best experts in ophthalmology. Jonathan Hutchinson, of London, in a recently published lecture, has confirmed the position here taken. In these cases there may be insufficiency of the internal recti or hypermetropia, etc., but not enough to account for the symptoms, and glasses do not cure them. This form of eye weakness is quite susceptible to the influence of physical contagion. A number of years ago it spread through many of the colleges and seminaries of the country—in some instances compelling young men to abandon their plans of a liberal education.

Muscæ Volitantes, or floating specks before the eyes, often annoy even the slightly nervously exhausted; in these cases, the ophthalmoscope is only of negative as-

sistance. Under exciting causes, the specks suddenly appear and disappear. The liability to them may be a habit of one's life. They come and go like other nervous systems.

Noises in the Ears in the shape of sudden explosions or pulsations, to say nothing of other varieties of tinnitus aurium, are quite common in cerebral exhaustion, especially when attended with congestion. These explosions may come on without any warning, while one is sitting quite still, and there is no apparent exciting cause. These symptoms may occur even when there is no perceptible disease of the auditory apparatus, and may disappear as suddenly as they appear. A feeling of fullness and oppression in the head sometimes attends these symptoms. Subjective odors of various kinds—as of ozone or phosphorus; also abnormal subjective tastes—bitter or sour, with other fleeting symptoms of cerebral exhaustion, are observed.

Sometimes there is a pumping sound in one or both ears, synchronous with the movements of the heart, worse usually during or after exertion, as going upstairs; and it may be very annoying when one is very still, as when lying down in bed in the night; it is apt to be worse when stooping, or when worried or annoyed or flurried by any mental emotion. If this symptom were a constant one, and were always associated with demonstrable disease of the drum or middle ear, it might not perhaps be so great a mystery; but appearing as it sometimes does in those whose hearing is clearly perfect or nearly so, and coming and going alternate with other symptoms of neurasthenia, without oftentimes any exciting cause being traced, it is probably due to the hyperæsthesia of the auditory nerve and analogous to that of the retina; and, like the retinal hyperæsthesia, it is inconstant, variable, and

capricious. My friend Dr. Schell, of Philadelphia, tells me that he has seen a number of cases where there were attacks of pain and aching in the ear, analogous to the pain and aching of the neurasthenic eye; but to account for which no objective appearances can be found.

Atonic Voice.—When neurasthenia lays its hands on a man, it is liable to leave its impress on every organ and function of the body; from the crown to the toe there is not a fibre that is safe from attack. If some parts escape in one individual, they suffer in others. If at one stage of the malady certain regions are unaffected, it may be only that they may be attacked with all the greater violence at another stage. Thus the hair, the scalp, the eyes, the ears, the nasal and respiratory passages, the brain, in whole or in part, the cranial nerves, the heart, the spinal cord in any portion, the sensory and motor nerves, the stomach and bowels, the reproductive system, the skin, the nails, the secretions, the excretions, the absorbents —all are objects of assault.

It is not strange, therefore, that there should be a neurasthenic voice, just as there is a neurasthenic eye, a neurasthenic stomach. The chief peculiarity of the neurasthenic voice is softness, faintness, want of courage and clearness of tone. These terms, though vague, express perhaps, as well as it is possible to do in words, how this voice deviates from the normal voice, but at best verbal descriptions are faulty, and far inferior to even a single living illustration. To a physician accustomed to see these cases and to observe the voice, there is but little difficulty in at least suspecting the diagnosis by this symptom alone. This neurasthenic voice somewhat resembles the peculiar voice of the deaf; and yet it is not precisely like that, and can usually be

distinguished from it. A neurasthenic sufferer may have the muscles of an athlete, and be so strong that a hard day's toil is but play, and yet speak in a voice which in quality and volume of sound suggests the beginning of convalescence from a severe fever.

"The voice," says Emerson, "is a delicate index of the soul," and with scientific truth the same philosopher asserts, that the orator can often tell by the quality of his own speech, at the beginning of an oration or sermon, whether he is or not in a mood of speaking, whether he is to be eloquent or will utterly fail.

A dissolute life, especially in women, always registers itself in the voice, impressing a coarseness that in its quality is almost diagnostic. The queens of song are never grossly impure.

There are a number of cases of various forms of diseases of the larynx, which have been reported by Dr. Elsberg, Dr. Cutter, and others, that are clearly reflected from the reproductive organs, and which yield to treatment directed to these organs, when no local treatment in the larynx is employed.[1] My friend, Dr. Morrell Mackenzie, of London, told me this summer that he did not see these cases. The answer which I gave was, that in this country nervous irritability was far more frequent than in England, and that there is far more liability to reflex irritations of this kind.

Deficient Mental Control.—Inability to concentrate the intellect on any task, as in writing or thinking, is a notable symptom. The mind wanders away in every direction, and when brought back by an effort of the will, is liable to be soon again lost in reverie.

In some cases, the exercise of concentration, or even

[1] Dr. Cutter's paper on this subject was read at the meeting of the American Laryngological Association, and published in the *St. Louis Medical and Surgical Journal*, November, 1879.

slight attention, is exceedingly irksome and painful, causing distress sometimes in the head, sometimes in the back or extremities, or other parts of the body.

Inability to control the mind shows itself in various ways. An individual may take up a newspaper or book and read over a paragraph a half-dozen times, without knowing anything about that paragraph, without being able even in a general way to tell what he has been reading. Sometimes, in discouragement, they throw down the book; in despair they may attempt to write a letter, and find that they must give it up before a single page is completed, the mind wanders in a sort of day dream as far as possible from the subject to which they would direct their thoughts; they find that their brains are masters and not themselves. Such a person often finds himself absorbed in a kind of dream, perhaps sitting quite still and forgetful of the work to which he has directed himself. A clergyman who consulted me in the past year for cerebrasthenia, or brain exhaustion, tells me that, although he can read even profound treatises, and converse on difficult themes, yet if he should attempt even to dictate and systematize a sermon he would be obliged to give up; the very idea of sustained, directed thought at once takes away all his power.

Closely allied to this deficient mental control, and indeed a part of it, is what a layman, Mr. Richard Grant White, calls "Heterophemy," that is, saying one thing and meaning another, saying oftentimes directly the opposite to what we meant to say; saying precisely what we wish to avoid; the word we wish slips in ahead of the one that we would bring to the front. Persons in health are frequently guilty of this very interesting blunder; but in disease of the brain it becomes a very bad sometimes very amusing as well

as very annoying symptom. One of my old patients (the wife of a patient just referred to), who has both brain exhaustion and spine exhaustion, sometimes is compelled to mention a number of different words before she strikes the word she wishes. If, for example, she would have a book, perhaps she would say chair or sofa. She was not troubled in this way until she became neurasthenic, and since that time she has been troubled constantly.

Mental Irritability.—A man comes home at night specially tired, and finds himself, or his friends find him, in a condition to fret and worry and become irascible over trifles which, when feeling well and calm, would have no influence upon him. The flurries of domestic life, the cares of the house, disappointments and vexations, the noise of play of children, become a source of great distress, and he expresses this distress in his words and actions.

This behavior may be either physiological or pathological—the habit of a perfectly healthy man or a symptom of neurasthenia; appearing in one previously good-tempered, and associated with other neurasthenic symptoms, it becomes of diagnostic value.

Hopelessness.—When a patient is dying, in the last stages of consumption or cancer, he is often, if not usually, hopeful; and sometimes he does not abandon the expectation of recovery even when on the edge of the grave. After friends have given up utterly, and the physician only comes to relieve, the patient himself is full of hope.

In functional nervous disorders, that are relievable if not curable, the reverse phenomenon is observed. The patient, even in the earlier and milder stages, is without hope, while the friends laugh at his fears and ridicule him for talking or thinking of his symptoms.

A good example is found in an attack of sick headache, but nearly all the neuroses exhibit this phenomenon, in greater or less degree.

In organic, structural, and incurable disease, such as cerebral paralysis, paraplegia, etc., the sufferer is far less likely to despair of relief.

The philosophy of this symptom of hopelessness appears to be similar to that of morbid fear—an instinctive consciousness of inadequacy for the task before us. We are hopeless because our nerve force is so reduced that the mere holding on to life seems to be a burden too heavy for us. A certain amount of nerve strength is necessary to supply the courage requisite for simple existence. Abstaining from dying demands a degree of force just as the mere keeping in an erect position—standing up without taking a single step—is only possible to those who have a certain quantity of strength. Abstaining from dying, like abstaining from falling, is in one respect a negation only, but neither is possible without an expenditure of force.

In our half-awakened moments at midnight, a slight noise causes the heart to beat rapidly, for we are conscious of not having full possession of our powers to meet any attack or danger. The nervously-exhausted man is always in this state, physically insolvent, and unequal to the task of living.

The despair of sea-sickness well illustrates this phenomenon. In the short space of an hour, or less, one can be reduced from a state of perfect bliss to perfect misery, simply from the perturbations caused by the motion of the vessel.

One time, when returning from England, our steamer collided with a sailing vessel in such a way and under such circumstances as to give just reason for the belief that we might be in serious peril. In the height of

the excitement and alarm a sea-sick passenger came out from his room, where he had been shut up ever since our departure, and inquired what the trouble was all about. He was informed that our steamer was leaking and that we were fast sinking. "If that's all, I'll turn in again," he replied, and went back to his berth, whence he did not emerge until we all landed in New York.

In some cases of neurasthenia, this hopelessness is intermittent, periodic, like attacks of inebriety or neuralgia, and these attacks are quite independent of all external conditions, although they may be excited and modified more or less by the environment. Hopelessness, as has been said, is quite distinct from hypochondria, defined and described elsewhere. (See Chapter III.)

Morbid Fear.—The emotion of fear is normal to the human mind. It is as natural and as necessary to be afraid as to be courageous. Fear is, indeed, a part of the first law of nature, self-existence. This emotion is, therefore, physiological, varying both in degree and kind, with race, sex, age, and the individual. In neuropathology, especially in the pathology of functional nervous diseases, the difference between health and disease is of *degree* rather than of kind; the phenomena that belong to what we call health passing, by indefinite and not distinctly defined gradations, into the phenomena of what we call disease; pathology being, in truth, as has been said, but the shady side of physiology.

Morbid fears are the result of various functional diseases of the nervous system, and imply a debility, a weakness, an incompetency and inadequacy, as compared with the normal state of the individual. A healthy man fears; but when he is functionally dis-

eased in his nervous system he is liable to fear all the more; to have the normal, necessary fear of his physiological condition descend into an abnormal pathological state, simply from a lack of force in the disordered nervous system. The debility of the brain—the nerve impoverishment—renders it impossible to meet responsibility, just as paraplegia makes it difficult or impossible to walk; morbid fear is indeed but a psychical paralysis, but of a functional rather than of an organic nature.

Patients of this kind will walk up and down before a physician's office many times before venturing to enter. In a number of instances, patients of mine have told me that they have come to the office and gone away without being able to summon the courage to ring the bell, and have gone away and have waited for weeks before again making the attempt. These confessions come oftentimes from men in middle life who are actively engaged in most important business enterprises, where they are compelled all the time to meet and deal with large numbers of people.

This timidity becomes a serious matter in business, making success very difficult. One of my patients troubled with cerebral exhaustion (cerebrasthenia), of very large wealth and great business experience, tells me that, desiring once to borrow, on perfect security, some money for a certain business purpose, he walked several times up and down the front of the office of the capitalist whose aid he sought, before he could summon the strength to go in.

Responsibility of any kind, without any labor, even when unconscious, may powerfully affect the system, and in various ways.

A very eminent theologian and preacher, who consulted me three or four years ago, told me that when

he had charge of a parish, the responsibility of sitting in his pulpit and listening to a travelling agent exhausted him more than preaching himself, for the reason that he continually feared that the stranger would say or do some indiscreet thing.

Thus it comes to pass that with the development of functional nervous diseases in modern times, particularly with the increase of neurasthenia in its various phases, there has been an increase in the forms of morbid fears, and in the number of their manifestations. When any special phase of morbid fear assumes a considerable frequency and consistency, so as to allow of classification, it is proper and convenient to give it a special name by which it can be known, described, and referred to. With the understanding that these morbid fears are symptoms of diseases, rather than diseases of themselves, simply belonging to a large family of symptoms, it is a very important convenience to be able to recognize them, to interpret their meaning, to understand their relations to the other members of the same family of symptoms, and to be familiar with their diagnosis and treatment. It would probably be a correct statement to say that no symptom of functional nervous disease is so likely to be overlooked, or slighted, or misinterpreted, or improperly named, as this one symptom of morbid fear; it is diagnosticated as hysteria, hypochondria, dyspepsia, imagination, biliousness, and actual insanity. Insanity has, it is true, its morbid fears, but they are associated with delusions or hallucinations.

There are quite a number of varieties of morbid fear associated with cerebrasthenia, or brain exhaustion, without any hallucinations or delusions. The patient knows that there is no just, objective ground for his fear, but his emotional nature, under the influence of

his exhausted nervous condition, overcomes his reason and will.

A number of years ago, I described a form of morbid fear under the term *astraphobia*, or *fear of lightning*, from the Greek *astrape* and *phobos*, fear. Of this disease I have seen quite a number of cases, and have nothing to say in regard to it beyond what has been already published. The leading symptoms are headache, numbness and pain in the back of the head, nausea, vomiting, diarrhœa, and, in some cases, convulsions. These symptoms are preceded and accompanied by great dread and fear. One of my patients tells me she is always watching the clouds in summer, fearing that a storm may come. She knows and says that this is absurd and ridiculous, but she declares she cannot help it. In this case the symptom was inherited from her grandmother; and even in her cradle, as she is informed by her mother, she suffered in the same way. A lady now under my care, the wife of a clergyman, was first attacked with these symptoms six years ago, in connection with other symptoms of general neurasthenic and uterine difficulties. Her husband tells me that on the approach of a thunder-storm he is obliged to close the doors and windows, darken the room, and make things generally inconvenient for himself and family.

After the reading of a paper on this subject by me at the meeting of the American Neurological Association, in June, 1879, Dr. Webster, of New York, related a case of fear of storms, simply *as* storms, without reference to lightning. A woman forty years of age, whose mother, during pregnancy, had been frightened by a storm, suffered severely during the progress of a storm, walking up and down, in great distress, and arousing the whole house—at times appearing almost insane from terror.

Westphal more recently has described a form of morbid fear under the term *agoraphobia*, or *fear of places*. This title, however, is quite inadequate to express the many varieties of morbid fear which the expression fear of places covers. The Greek word *agora*, from which Westphal derives his term, means an open square—a market place, a public place where assemblies were held—and as applied to the cases first described by him, the term is practically, though not etymologically, a correct one, for the fear of going across open squares or places, at a distance from houses to shops, was the chief feature in all of those cases.[1] This fear of open squares or places is, however, but one of a large number of phases that the fear of places assumes, as I have elsewhere described. In strictness, fear of places should be derived from the Greek word *topos*, place, a generic term, while *agora* is a special kind of place; *agoraphobia* would, therefore, be a species of *topophobia*, or a general fear of places, which symptom seems to be capable of infinite variety. Thus one of my cases, a gentleman of middle life, could walk up Broadway without difficulty, because shops and stores, he said, offered him an opportunity of retreat, in case of peril. He could not, however, walk up Fifth Avenue, where there are no stores, nor in side streets, unless they were very short. He could not pay a visit to the country in any direction, but was hopelessly shut up in the city during the hot weather. One time, in riding in the stage up Broadway, on turning into Madison Square, he shrieked with terror, to the astonishment of the passengers. The man who possessed this interesting symptom was tall, vigorous,

[1] In etymological strictness agoraphobia means fear of *large assemblies* of human beings, and not of the place where the people meet.

full-faced, and physically and mentally capable of endurance. He had, however, other symptoms of cerebrasthenia. These fears take opposite phases; thus, with one it is impossible to go to a certain place, where he was perhaps first attacked with the evil symptoms. And another finds it impossible or very difficult to go out of his house to any distance where business calls. I have now under care a patient who for a long time has been shut up in his house, unable to go anywhere, simply from fear of going anywhere. For a long time he was unable to come to consult me; but now I see him regularly; but he did not, until lately, since he has improved, go anywhere else. Quite a number of persons I have seen who find it difficult to go on long journeys, and if they do go, must have company. A person wrote me from a distant city in the West, expressing a desire to come and consult me, but upon reaching a city at some distance, was compelled to return home without reaching New York. All these forms of morbid fear—fear of leaving home, fear of going to any locality or in any direction, fear of travel —are properly varieties of *topophobia*, the fear of open squares or places being expressed, though not quite correctly, by *agoraphobia*.

I have known four persons who were unable to cross the Brooklyn Ferry, and all got well in a few weeks or months.

My friend, Dr. D. E. Smith, of Bronxville, N. Y., tells me of a lady who is unable to cross Harlem River on the cars, and consequently cannot visit New York City.

I have now under my care a lady in whom the topophobia takes the form of inability to go to church. It was in church that she was first taken with a peculiar and hard-to-be-described lightness of the head; and she

now feels that she could do almost anything else rather than attend church. Ability to do that she would regard as the best and strongest sign of recovery. A young business man, who was first attacked with bad symptoms in his factory, dreaded to enter the building, until, under various treatment, he recovered.

Some of the phases of this morbid fear are very interesting and surprising, even to those who are most familiar with the caprices of the diseased nervous system. I have elsewhere published a brief account of the physician who consulted me in regard to himself for long-standing cerebrasthenia, one of the symptoms of which was inability to go away from his home or office, or place where he was stopping, to any considerable distance in a direct line. He had the muscular strength to walk twenty miles, but when summoned to a patient was often obliged to decline to attempt to go even half a mile, which was a great astonishment to his patients, who were aware that even when unable to visit them he could work all day in his garden. Like many of these cases he had a morbid fear of visiting the place where he was first attacked by any of his ill feelings; thus he had been at one time prostrated in New York City, and felt incompetent to come here to consult me; accordingly I met him by appointment in a distant city. In walking out with him one morning, I observed that he continually turned off to the side streets, so as to keep at a little distance from the hotel where he was stopping for the day, and, on my questioning him, he said that he could not go more than half a mile in a straight line, and that therefore he turned into the side streets so as to keep the hotel near at hand; the result was that we walked arm in arm, circumnavigating the hotel at a moderate distance —although not always keeping it in sight. The patient

was not at all wearied, although the walk was a long one—in a direct line perhaps a mile or two.

I have now under care a patient whose morbid fear takes just the opposite phase: he cannot go to a certain locality, but can go very near to it, and beyond that point his own will is often powerless to urge him forward. He was first attacked while in a lithographic establishment, working at his trade; and from that hour he has found it hard or actually impossible to enter any building devoted to that business. One day he resolved that he would conquer what seemed to him and his friends a foolish whim, and started out for the shop, but on arriving within sight—about the distance of a block—he was compelled to stop; a cordon of policemen could not have been a more effective blockade; resolved not to be beaten, he retired a short distance, and approached the building from another direction, but was again brought up against the imaginary barrier, and so in succession all the points of the compass were tried with absolute failure.

He had a chance to work in Syracuse, and went to the depot to take the train for that city, but on entering the station and going up to the office, he burst into tears and could not buy his ticket; he tried and tried, and finally gave up and returned home. He could have walked to Syracuse, but he could not reach out his hand and purchase the ticket for his fare. At another time he succeeded in reaching Cincinnati in quest of employment, and was directed to a lithographic establishment where he expected to be employed; but in spite of all his repeated trials he could only come within sight of the building, and he was forced to return to New York.

I have just been consulted by a physician who, as one of the effects and signs of cerebrasthenia, cannot

at times undertake any slight responsibility; thus he has sometimes allowed a large number of horse-cars to pass him before he could bring up the resolution to jump on board one of them; and yet his muscular strength at the time was excellent.

Dr. Meschede brought to the attention of the physicians at Cassel, in Germany, a form of morbid fear quite the opposite of what is known as agoraphobia, or fear of *open* places. In his case the symptom was fear of *close, narrow* places. The patient, a young man twenty years of age, was seized with a feeling of giddiness and confusion when in a small, narrow room. In the summer he could not sleep in a room at all, but was obliged to camp out; in winter he slept in a large, airy room. He was obliged to give up his studies and become a farmer. This symptom cannot be classed as agoraphobia at all, for it is the reverse condition. It belongs properly to what I call *topophobia*, fear of places; and is, like agoraphobia, a species of which topophobia is the genus.

At the late meeting of the British Medical Association (1879), I listened to a very interesting paper entitled "Claustrophobia," by Professor Ball, of Paris. This term he applied to this morbid fear of narrow places—inability to stay within doors. Dr. Ball related a number of cases illustrative of this phase of nervous disease, and referred to Meschede and others, who had studied the same subject. The term Claustrophobia, fear of close places, as its derivation implies, seems to be an excellent one and may well be accepted.

A form of morbid fear that I have lately described, and of which I have seen a large number of cases, is *Anthropophobia*, derived from the Greek *anthropos*, man, and *phobos*, fear. This term applies to aversion to society, a fear of seeing, encountering, or mingling

with a multitude, or of meeting any one besides ourselves This phase of morbid fear has different varieties. In quite a number of cases, this fear of man is so severe as to compel patients to give up business entirely; and I know a number of cases where men of strong muscles and having the appearance of great physical strength have been compelled, through this symptom alone, to withdraw from the occupations in which they were engaged; they could not face men, deal with them, persuade them to buy or sell, or have any influence over them; they dreaded to meet a human being. This form of morbid fear is often accompanied with turning away of the eyes and hanging down of the head, but not necessarily so, and usually so only in the severer cases. The world over, aversion of the eyes with a turning away of the face is an expression of the emotion of humility and bashfulness, that is, of a feeling of weakness as compared with the person in whose presence we stand—an instinctive and involuntary recognition of the fact that, for the moment, our force is inferior to his. In neurasthenia this same principle appears as a pathological symptom—an expression of debility, of inadequacy, of incompetence. This aversion of the eyes is so constant a symptom in these neurasthenic patients that I often make the diagnosis as soon as they enter the office, before a word has been spoken by either party, and even before the patient has had time to be seated. I have now under my care a young man who is so badly anthropophobic that, even when I take his head in my hands and hold it up, it is impossible to keep his eyes fixed on mine for more than an instant. A very intelligent and able friend, once under my professional care, displayed this same characteristic, and I have often talked with him in regard to it. This phase of morbid fear is a very

good barometer of the condition of the system. From this alone we can often judge whether the patient is improving or growing worse. It is a very interesting symptom. In some cases I have known it to come on suddenly, or at least with very little warning, save the other associated nervous symptoms.

This phase of morbid fear also has its opposite. In some persons there exists what may be called *monophobia*, or fear of being alone. Some of these persons cannot travel alone, but have no difficulty in travelling if they are in company with some one. Sometimes they cannot walk the street alone, or leave the house, except in company. Dr. C. L. Mitchell tells me of a gentleman who was so badly topophobic that he was unable to leave his house without company, and accordingly he paid a man $20,000 to be his constant companion. There have been men who, by this symptom, have been kept as close prisoners as though within the walls of a penitentiary

A form of morbid fear that has long been known to the profession is *pathophobia*, or fear of diseases—more commonly known as hypochondriasis. This form of morbid fear seldom exists alone, but is found in company with other symptoms—some real disorder of the nervous system. The pathophobic sufferer, with brain or stomach, or both, exhausted for some reason, may fear disease of the heart, of the stomach, or of the brain, or of the reproductive system, even when there is no sign of disease except his fear. The mistake usually made in the study of these cases is to assume that this fear of disease is the only symptom which the patient has, and that it is the cause of the disease; whereas, usually, it is the result of the disease of cerebral exhaustion, like the other forms of morbid

fear, whatever the cause may be; and as such it should be studied and treated. (See Chapter III.)

There is a manifestation of morbid fear which is not uncommon, and to which we might perhaps give the term *pantaphobia*, or fear of everything; all responsibility, every attempt to make a change of movement being the result of dread and alarm. The wife of one of my patients has a morbid fear in reference to one of her sons, a lad of about fifteen years of age; and so distressed is she by it that she cannot allow him to go out of the house, or out of her sight, fearing lest he may be kidnapped, or some harm may come to him, as in the case of Charlie Ross. The poor fellow is thus kept a prisoner most of the time, and the whole family is disturbed and annoyed. He must remain in the city during the summer, as she cannot allow him to leave town; and at no season can he go anywhere unless accompanied by his tutor.

A lady now under my treatment, who is also *astraphobic*, tells me that she is afraid to go into the street, to do any shopping, or attend to any business; that it is an affliction for her to see a physician; everything is a dread to her, even when there is no draft made upon her physical strength.

The expression, *phobophobia*, fear of fears, might possibly apply to a certain class of nervous patients who fear they may fear, provided they make an attempt to move or go in any direction where their morbid ear is in the way; they are afraid even when they do and say nothing. These persons fear when they are entirely still and inactive, from a fear that if they attempt to do anything they will be attacked with their especial morbid fear. One of my patients —a stout and large man—in addition to topophobia (fear of places) had at one time a fear of committing

some crime that would disgrace him. He was ashamed of his fear; he could not help it, although he has now entirely recovered.

Mysophobia, fear of contamination, lately described by Dr. Hammond, comes under this head; the results of the treatment showing very clearly that it is symptomatic of a similar or analogous condition of the brain. In those cases there were no hallucinations or delusions.

In one of the cases, there was an irresistible desire to wash the hands; the patient spent a large part of her time in that occupation. One of the patients washed her hands as many as two hundred times a day.

I lately saw, in consultation with Dr. Carpenter, a lady who was full of morbid fears, some of them of the most absurd character; she feared storms and was in apprehension of earthquakes, and, in certain crises, when at her worst, she could not let her husband set out on a short journey on a matter of business. In this case, the tendency to morbid fear was hereditary; her father being a most striking instance of mysophobia, having such dread of dust that he never sits down in a chair until he has well dusted it, no matter in whose presence he may be. He will even get up in the night and dust all his clothes with great thoroughness, holding them out of the window so that the room may not be defiled.

Siderodromophobia.—"This is a form of intense spinal irritation, described by Rigler of Germany, coupled with a hysterical condition, and morbid disinclination for work, which is the result of shock, and occurs among railroad men; most commonly seen in cases of railway-engine mechanics who have some altered nerve condition, or irritation of the nerve-centres. It is the perpetual jarring, shaking, and noise

which lead by degrees to this change, and which under the influence of some unexpected shock completely breaks up the nervous equilibrium."

I have very lately seen two cases where the morbid fear was directed against drunken men. I have had under care a young man of intelligence and culture, who is neurasthenic in many important features; and, indeed, has been an unusual sufferer from this trouble, who is so afraid of meeting or coming in contact with a drunken man in the street, that he will stay in the house, even when necessary for him to be out, rather than go out and run the risk of meeting such a person.

On the ferry boat, if he sees a drunken man, he goes to the extreme end of the boat, to get as far as he can from the object of terror. He tells me that, one time, getting on a street car, there was a man only slightly intoxicated; he could not remain on the car, but was obliged to leave it before he had nearly arrived at his destination. This fear seems to be a fear of a row—of some trouble which the drunken man may cause, rather than any fear of the man himself.

In the case of this young man, the difficulty is periodic. There is a certain street down-town, in the vicinity where intoxicated men are often found, where his business sometimes compels him to go. He can go through this street before three o'clock in the afternoon, but not after that time.

In regard to all these different forms of morbid fear, by whatever name they are known or described, these general propositions are true and verifiable:

First.—These morbid fears are symptomatic of functional, never, or rarely, of organic diseases. The existence of any of these symptoms, in a doubtful case of diagnosis, would alone almost establish the nature of the disease, or enable us to give the casting vote.

The best test of skill in the practice of neurology is in making a differential diagnosis between functional and organic diseases in their early stages; for this cause alone morbid fears demand close attention.

While it is possible for hysterical and neurasthenic symptoms to appear and maintain themselves, more or less, in organic diseases, yet these symptoms of morbid fear are not found, according to my observation, in what we call organic or structural diseases of the brain or spinal cord; it is strange that they are not, but the fact as here related is verifiable.

They are not found in insanity itself, save as delusions or hallucinations, and the habit of calling them forms of mania or delusion is not based on fact or a right study of these cases. I observe that, even now, some forms of morbid fears are classed under insanity, or mania of some kind, even when there are no delusions or hallucinations. When the insane have morbid fears, such as I have described, or very many others which they may have, and do have, as we all know, they are delusions out of which they cannot be reasoned, and are a part of, and in harmony with other delusions of the insane. But in all the cases to which I have here referred, there are no delusions and no hallucinations whatever; the patient is as well aware of his troubles as his friends are, and is as anxious to get rid of them as he would be of a sick headache, fever, or paralysis; but he is unable to shake them off until the exhausted brain, of which they are the direct result, is strengthened by hygiene and time and treatment.

Second.—These symptoms may come on suddenly, in some cases almost instantaneously, and when once they appear, they may exist for months and years, varying in intensity at different times, like other symp-

toms of cerebrasthenia, with which they are often associated.

Third.—These morbid fears are very frequently, though not always or necessarily, the result in whole or part of disorder of the reproductive system.

Excess in the male in the natural or unnatural ways, or prolonged and teasing continence united with sexual excitation, and in the female, various slight and superficial uterine erosions, or displacements or lacerations, are the common provoking causes of these morbid fears, especially in constitutions where the nervous diathesis predominates.

These fears may exist long after the local difficulty has been cured; in this respect these symptoms follow the law of the nervous symptoms with which they are so often associated. Some of these cases are anæmic, but the majority are not so, and many are models of physical strength.

Fourth.—The morbid fears rarely exist alone. They almost always appear in connection with other symptoms of neurasthenia, either myelasthenia, exhaustion of the spine, or cerebrasthenia, exhaustion of the brain; most frequently the latter. I think, indeed, that I have never seen a case of morbid fear, such as I have here described, that existed alone, without some one accompanying neurasthenic symptom, or many such symptoms. In some cases, I admit, these accompanying symptoms are few and slight, and can be ascertained only by careful study.

Among those associated symptoms may be mentioned palmar hyperidrosis, flushing of the face, a feeling of profound exhaustion, insomnia, hopelessness, shooting pains in the extremities, excess of oxalates and urates in the urine, heaviness of the loins and limbs, dilated pupils, local spasms of muscles. Only

rarely, however, is there a complete picture in which all these symptoms are represented. Like all these symptoms of neurasthenia, morbid fears very often occur in those of great, even enormous muscular strength and endurance; many of them can walk and work all day with muscle and with brain; but in the presence of their special fears they are as infants.

A very frequent accompanying symptom is dizziness. Many of these cases, when they approach the object of dread, or even think of approaching it, are seized with vertigo—sometimes with less defined abnormal sensations. I have seen three cases where an epigastric spasm appears on attempting or even thinking of doing anything which is a dread. I have now under care a patient who tells me that he has a spasm in the stomach whenever he thinks of doing anything where he fears a failure. He describes it as a sudden sinking—a falling, somewhere between the base of the lungs and the navel.

This patient has also a large array of correlated nervous symptoms, such as sweating of the hands, twitching of the eyelids, mental depression, etc. One of these cases had this phase of spasm—sinking in of the stomach; while at school it would come upon him whenever he was called upon, or feared he might be called upon, to read; even the thought of responsibility, though it might be in the remote future, brought on the attack.

For convenience of reference, this classification of morbid fears may be thus tabulated:

ASTRAPHOBIA—Fear of lightning.

TOPOPHOBIA—Fear of places; a generic term, with these subdivisions:

Agoraphobia—Fear of open places.

Claustrophobia—Fear of narrow, closed places.

ANTHROPOPHOBIA—Fear of man; a generic term, including fear of society.

Gynephobia—Fear of woman.

MONOPHOBIA—Fear of being alone.

PATHOPHOBIA—Fear of disease, usually called hypochondriasis.

PANTAPHOBIA—Fear of everything.

PHOBOPHOBIA—Fear of being afraid.

MYSOPHOBIA—Fear of contamination.

Flushing and Fidgetiness.—Patients of this class oftentimes easily flush and easily faint; the inhibitory action of the sympathetic is readily interfered with by any slight emotion. Fidgetiness and nervousness, inability to keep still—a sensation that amounts to pain—is sometimes unspeakably distressing. Although it cannot be defined, it may be an accompaniment of growing pains, and is one of the myriad results of spinal irritation. Sometimes in writing, the hand and arm become so nervous and fidgety that to continue writing would be the severest torture. When the legs feel this way, the sufferer must get up and walk or run, even though he be debilitated and is made worse by severe exercise. A gentleman once under my care could not sit still in the chair long enough to take an application of electricity.

Frequent Blushing.—A very common effect of nervous exhaustion, in both sexes, is frequent and severe blushing from the slighest possible mental or physical causes, and extending sometimes, not only over the face, forehead, and ears, but down the neck, and apparently over other portions of the body. Suddenly meeting any one, a stranger or acquaintance, the hearing of an unexpected noise, the taking of food or drink into the stomach, especially when rapidly swallowed, any stooping, or straining, or any slight muscular or

mental exertion, may bring on this unpleasant, perplexing, and annoying symptom. In some cases the symptom appears without any objective cause whatever; the person may be sitting all alone, and the face, under some thought, or fear, or anxiety, or feeling of responsibility, may become as red as though suddenly entering company.

This blushing is accompanied sometimes by blinking of the eyes, smarting or stinging of the eyelids, twitching of some of the muscles of the face, confusion of mind and stammering of speech, which, like the reddening of the face, are beyond the control of the will. Infants under one year never blush, for they do not feel that sensitiveness in regard to what others think of them, that is needful to excite blushing.

Some of the peculiarities of blushing are very interesting. A lady patient of mine, who is of a very sensitive organization, tells me that when she blushes, little red spots, resembling measles, first appear on the cheeks, and then extend down over the neck; in a moment these coalesce into a diffused redness.

Sir James Paget, while examining the spine of a girl, noticed that a big splash of red appeared on her cheek; this was followed by others over her neck and face. On questioning her mother in regard to it, she said that the peculiarity was inherited from her, and in answering this question she blushed like her daughter.

Blushing is a physiological phenomenon; but, like many other physiological phenomena, may become pathological, both causes and results of disease. When it becomes excessive, as in the above description, it may be regarded as pathological. As a symptom of neurasthenia, it is more common and more distressing than is generally believed. I have seen very strong, vigorous men, who have large muscular power and

great capacity for physical labor, who, while in a neurasthenic state, would blush like young girls. Some young men are so harassed by this symptom that they cannot meet young ladies in the street or go into any company of their own sex without blushing excessively; and on this account they frequently keep away from society altogether.

This symptom does not occur in the modest, diffident, and retiring alone; the bold, the energetic, and the determined—those who can and do push their way in life—may become victims of this disorder. It is said that Thomas Brown, the author of Religio Medici, was a sufferer in this way. While this very paragraph is being constructed, I am consulted by a young physician of intelligence, ability, and education, who, although suffering from other neurasthenic symptoms of at least disagreeable character, yet complains more of this blushing than of all other symptoms combined, and for this, chiefly, came to ask my advice.

Like many of the other phenomena of neurasthenia, this blushing may come and go—lasting for months and years, and disappearing as suddenly as it came. Like sick headache, it has a tendency to disappear as we advance in life. It is, also, as amenable to treatment as other symptoms of neurasthenia.

Insomnia.—The different phases of insomnia in neurasthenic patients are exceedingly interesting.

One man finds no difficulty in getting to sleep on retiring, but soon awakes, and must remain awake for the rest of the night. Another man rolls and tumbles for hours before he falls into oblivious slumber, but when once asleep does not usually wake until morning. I was recently consulted for a case of insomnia of many years' duration, where there had never been any difficulty in sleeping after getting to sleep.

Other sufferers report that they sleep in fragments —oases of repose in a desert of dreary wakefulness— but bad dreams constantly harass them so that in the morning they are less rested than they should be. Why a bad dream should be a bad symptom is not quite clear. Why a man disturbed by indigestion, or exhausted nervously by excitement late in the evening, should dream of snakes and monsters instead of green fields and gardens, of death and murder instead of delightful society and experiences, has perhaps only this general explanation, that the normal action of the cerebral cells is designed to be, in the main, pleasurable, and that mental, like physical pain, is a symptom of something abnormal. It is also a question how far dreams are pathological. It would seem that in perfect health—if there be such a state—one might dream even unpleasantly; and yet there is no doubt that savages, and farmers, and, in general, those who live outdoors, depending on their muscles for their subsistence, dream far less than the in-door brain-workers My guide in the woods of Maine and northern New Hampshire tells me that he very rarely dreams, and one cool, phlegmatic man, whom I met in that region last summer, assured me again and again that he never, in all his life, had a dream that he could recall; and with that class, as a rule, dreams of any kind, good or bad, are exceptional.

Some neurasthenic patients can only sleep by night —never by day, however wearied. Others can sleep by day; often fall to sleep when they especially desire to keep awake, but at night toss in painful activity.

Physical exercise also acts very capriciously with different persons. Thus one of my patients tells me that if he takes a long walk in the evening, he is more restless

than usual that night; and yet he is a very strong man, capable of much physical and mental toil.

One peculiarity of sleeplessness is, that the mind is intensely and painfully active in many directions, or in some one direction, very often over the events of the day, and all the efforts of the sufferer to slow down the wheels of thought are inoperative; the patient dozes all night, or a good portion of the night, living over again in a most distressing way the experiences of waking hours. Nervously exhausted patients often wake up in the morning, feeling almost as tired as when they went to bed in the night; may have slept perhaps several hours, but they have not rested by the sleep; they get up tired and discouraged. All patients of this kind generally sleep more than they believe; they say that they get no sleep, when they do perhaps lose themselves several hours every night; it is impossible, as a rule, to convince such people that they sleep at all. It is, however, one of the interesting facts of the human constitution, that these sufferers can go so long, can live so many years, be active in business and social life, with so little sleep.

Drowsiness is the opposite symptom, and is experienced by persons whose symptoms in other respects are very much the same as those of the sleepless.

One of my patients, a clergyman, long suffering from cerebrasthenia, tells me that at one time, if he undertook to read, he would very soon feel sleepy, remain so for half an hour, wake up, attempt to read, and again feel sleepy; this symptom more than any other compelled him to resign his charge. In some cases this drowiness does not come to positive sleep; the patient is simply dull, heavy, sleepy, without having the ability to get asleep. It has been supposed that this drowsiness was a symptom of anæmia of the

brain, while wakefulness was a symptom of hyperæmia of the brain; but the truth is, that both conditions may be relieved oftentimes by the same treatment. On this subject, my friend Dr. Lente gives me this experience: He was in consultation with the late Dr. George T. Elliott, of this city, over a case of severe hemorrhage, which caused the patient to be very sleepless from profound anæmia. Dr. Lente suggested the use of bromide of potassium. Dr. Elliott objected, on the theory that the bromides tended to diminish the quantity of blood in the brain; bromide, however, was used, and it made the patient sleep in spite of anæmia. All close observers must have had experience very much the same.

Tenderness of the Teeth and Gums.—Attacks of tenderness of all the teeth, accompanied by a whitish appearance of the gums, I have noticed in nervous exhaustion. In these attacks, which may result from over-work, or excess, all the teeth may be very tender on pressure, although none of them are decayed. Here, then, is another opportunity to study with the naked eye the pathology of spinal irritation. In nervous exhaustion, whether complicated with anæmia or not, there may be tenderness of any part of the body or of the whole body. Tenderness of the head is cerebral irritation; of the spine, spinal irritation; of the tip of the spine, coccyodynia; of the breast, irritable mammæ; of the ovaries, irritable ovaries; of the teeth here described, dental irritation; and so on of the womb; and the pathology of any one of these symptoms is probably the pathology of all.

Nervous Dyspepsia (*Dyspepsie Asthénique*).—In cases—not a few—nervous dyspepsia is the first noticeable symptom of nervous exhaustion—the earliest sign that the body is giving way; and for years, the

stomach may be functionally disordered before the brain, or spinal cord, or other parts or organs, show signs of yielding. The true philosophy is, that nervous dyspepsia is a symptom of the same general pathological condition as all the orders of symptoms here noted, and it may follow or accompany as well as lead this multitudinous army. A literary gentleman whom I once met gave a history of nervous exhaustion from over-confinement, that after some years broke out through the pneumogastric nerve, causing profound and obstinate dyspepsia that for a long time made him a complete invalid; the symptoms were almost as bad as those of cancer of the stomach, and yet the disturbance was entirely functional, and the patient improved. Flatulence, with annoying rumbling in the bowels, these patients complain of very frequently; also nausea and diarrhœa.

I am accustomed to diagnosticate nervous dyspepsia from other forms of nervous dyspepsia depending on inflammation or other chronic disturbances, by the following considerations:

First, in nervous dyspepsia, the patients feel worse when the stomach is empty, and are relieved by eating. Patients of this class have the greatest distress before meals, or when a meal is long delayed; even over-eating is a relief to them. With these persons, mental or physical labor on a perfectly empty stomach is very apt to cause distress—pain in the eyes, pain in the head, general nervous distress all over the body, and pain in the stomach itself; indeed, there is no part of the organism that will not suffer when mind or body is much exercised on a perfectly empty stomach.

Secondly, the symptoms of nervous dyspepsia are very capricious, coming and going without traceable cause.

Thirdly, nervous dyspepsia is most commonly found with the nervous diathesis, and is apt to be associated with other nervous symptoms in other parts of the body. In some cases, nervous dyspepsia is a forerunner of a long list of nervous symptoms through all the different organs, as the eyes, the ears, the brain, the spine, and reproductive apparatus. In some cases, it takes the place of many of these symptoms, being better when they are worse, and worse when they are better.

Fourthly, nervous dyspeptics are relieved by remedies that have a sedative and tonic effect in general, without any special reference to the stomach. Electricity is one of the very best for all forms of this dyspepsia. The bromides, that have no special effect upon the stomach so far as we are informed, are very well adapted to relieve nervous dyspepsia.

Deficient Thirst, and Capacity for Assimilating Fluids.—Quite recently, a physician who consulted me in regard to himself, called my attention to the highly interesting fact that he rarely drank water either at meals or between meals; and he stated that the average quantity of liquid that he consumed was far below the normal standard. Investigation of other cases of neurasthenia has convinced me that this deficiency of thirst is one of the symptoms of that state, and it would appear that it is not an unusual symptom, but exists in not a few cases; there are many who for years have a poor appetite for fluids, as they have a poor appetite for solid food; they live on a small quantity of liquid, and, perhaps, without suspecting it, until their attention is directed to the fact. There are those who find that, if they take much liquid, the stomach suffers, even when little or no solid food is mingled with it. One advantage, with some disadvantages, of

the free use of beer with our German friends is in the quantity of fluid that they thereby imbibe—the water of the drink more than the alcohol. Drinking milk has a similar advantage.

When we remember that the body is composed mostly of water, we can easily see that there is a danger of starving for want of simple liquid, just as, under the influences of our civilization, we are starving for want of fatty food.

There is no question that the Europeans, who are far less nervous than the Americans, use far more liquid nourishment; and it is a fact, more and more impressed on my mind, that many neurasthenic patients are very temperate, if not total abstainers, and some abstain even from tea and coffee.

Desire for Stimulants and Narcotics.—When the nervous system loses, through any cause, much of its nervous force, so that it cannot stand upright with ease and comfort, it leans on the nearest and most convenient artificial support that is capable of temporarily propping up the enfeebled frame. Anything that gives ease, sedation, oblivion, such as chloral, chloroform, opium, or alcohol, may be resorted to at first as an incident, and finally as a habit. Such is the philosophy of many cases of opium or alcohol inebriety. Not only for the relief of pain, but for the relief of exhaustion, deeper and more distressing than pain, do both men and women resort to the drug shop. I count this as one of the great causes of the recent increase of opium and alcohol inebriety among women. Frequently an inherited tendency to inebriety is utterly latent, and does not break out until affliction, or some form of worry or distress, robs the brain of its nerve-force. Very many cases illustrative of this have been published by my friend Dr. T. D. Crothers, of Hartford, Ct.

One sign of neurasthenia, especially of an acute attack, is inability to bear certain kinds of stimulants and narcotics to which patients have been accustomed; thus patients have told me, that during illness of any kind, they were obliged to suspend smoking; they say that tobacco makes them sick. This happens to those who have been accustomed to use large quantities, both chewing and smoking. As they regain their strength, they also regain their power of using stimulants.

The opposite condition is also found; and a person when depressed can sometimes bear immense quantities of alcohol, who in health is capable of drinking but very little. It happens sometimes in hysteria, for example, that alcoholic drinks can be consumed very freely indeed, although the patient is very weak and nervous in every respect.

A hay-fever patient of mine—a frequent sufferer from that disease—who was accustomed to take several large doses of stimulants before an attack to prevent nervous exhaustion, told me that, while in that state, he would drink almost any amount of alcoholic liquors without being affected thereby. This form of idiosyncrasy against alcohol would appear to be a dangerous state, as it may lead to inebriety.

Abnormalities of the Secretions.—In nervous exhaustion, the eyes may become moistened more readily than in health, and under a very slight emotion of pleasure or of pain. The flood-gates seem, as it were, to stand ajar; and on trifling agitation the tears flow forth. In grave cerebral disease, this symptom is common enough, but in functional disease—simple nervous exhaustion—it is even more common; and "softening of the brain" is feared.

In nervous debility, also, the sebaceous glands may

refuse to do their duty; the hair and beard become dry and stiff, and much pomade is needed. The hair then falls off or becomes gray in patches.

Abnormal dryness of the Skin, Joints, and Mucous Membranes.—In some cases of neurasthenia the skin of the whole body is unnaturally dry; this is especially and most readily noticed in the hands, but all parts of the surface may present this peculiarity. A scaliness or scurfiness may accompany this dryness, as though there were a deficiency of fluids and of sebaceous secretion. There would also appear to be a relation between this condition and a disinclination to drink, or use fluids freely.

A young lady of twenty-one, in addition to many other neurasthenic symptoms, had dryness of the scalp, eyes and ears, especially in the morning; her eyes and ears would be dry and hot, and in the ears a thin skin would form, and fine scales would be thrown off. These symptoms were not constant; they would leave entirely for a number of days, and then, without any apparent cause, return—thus following the law of all other symptoms of neurasthenia

Dryness of the joints is also observed in the nervously exhausted. How the joints may suffer in grave spinal diseases, such as ataxy, is well known; but in these functional maladies, of which neurasthenia is a type, the joints may suffer, though in a less severe manner. Deficiency of the secretion, with dryness and cracking sound on movement, I have noticed in a number of cases; in one striking case of musician's cramp, cracking of the joints is noticed in the affected fingers.

Sweating Hands and Feet, with Redness (Palmar Hyperidrosis).—Sweating of the hands—of the palmar surface, or of the entire hand—palmar hyperidrosis—

is a symptom of neurasthenia at once so interesting and so frequent that I wonder that the literature of the subject is so meagre.

This phenomenon—abnormal perspiration of the hands—is certainly more common in males than in females, although it occurs, as, indeed, all forms of hyperidrosis occur, in both sexes. The milder phases are common enough, but there are severe manifestations that this symptom may assume, which seem well-nigh beyond belief. Thus a young man now under my care is so distressed thereby that he threatens suicide unless he is permanently cured. In his case, there are various evidences of a bad inheritance, a poor constitution, although this palmar sweating is just now the only very annoying expression of the depraved diathesis. A young lady in the northern part of the State is compelled to take a number of handkerchiefs with her when she goes to school, and on her return they are all saturated from the excessive perspiration of her hands. My friend, Dr. Josiah Roberts, of this city, tells me that in a similar case, lately brought to his attention, there was clear proof of uterine disease.

The intimate relation of this symptom to the nervous system is shown in many striking facts. Thus one young man who consulted me would be attacked periodically—at ten and four o'clock—and whenever he was at sea the symptom would utterly leave him. In one of my cases, the slightest emotion would instantly saturate the hands as thoroughly as dipping them in a pail of water. The effort to shake hands is sufficient to produce this effect. Redness of the whole hand—erythema—sometimes attends this palmar sweating, and in one of my cases the ears are as red as the hands.

One of my patients, now restored to health, tells me that his hand-sweating was so profuse that, in writing, he was forced to keep blotting paper beneath his hand to absorb the moisture.

I have been consulted by a physician who is so much affected with palmar hyperidrosis that a pair of gloves will not last him more than ten days, and his shoes also wear out rapidly.

Salivation.—Dryness of the mouth, through suppression of the salivary secretion, is often noticed, both as an effect of emotion and as an effect of nervous substitution; the opposite condition, salivation, is not so common.

A year ago, an intelligent physician informed me that, at one time, while in a neurasthenic state, he went to bed, and by an effort of the will, as he expressed it, brought on free salivation. Subsequent nights the same effect occurred, contrary to his wishes, and it was some time before he was restored to his normal, original condition.

Tenderness of the Spine (*Spinal Irritation*), *and of the whole Body* (*General Hyperæsthesia*).—When the spine is so tender as to become an important and permanent affliction, and to overshadow other symptoms of the neurasthenic state, it is called spinal irritation; but, strictly, it is a symptom, like cerebral irritation, not properly a disease as such, although, as a matter of convenience, there can be no harm practically in describing it as a disease. In regard to this symptom of nervous exhaustion, these points are noticeable: First, its great frequency in the higher classes, especially among women. I suppose if one should go through Fifth Avenue, of New York City, and examine the spines of all the ladies between fifteen and forty-five years of age, he would find in quite a per-

centage of cases that, at times, there would be tenderness either of the whole length of the spine, or, more likely, at certain points, as the nape of the neck, and between the shoulder-blades, and on the middle lumbar vertebræ. Crawling, creeping, and burning sensations often accompany this tenderness. This condition would be found at times in those who do not call themselves invalids, and who are not under medical treatment. It would furthermore be found that, with some of these cases, there would be tenderness of the scapula or hip bones, of the breast bone, and, indeed, of the whole surface of the body. This general hyperæsthesia, like the local hyperæsthesia of the spine, appears and disappears under any subjective or objective exciting causes, and is attended usually by a feeling of debility, and oftentimes, though not always, by backache, headache, insomnia, and mental depression.

The transient nature of this symptom of spinal and general irritation is shown by the fact that it may disappear often after a single application of electricity. Many women always have spinal irritation during the period of menstruation. Spinal irritation—tenderness on pressure—is not the only symptom of spinal exhaustion; it is but one of many symptoms of that state. In some cases of spinal exhaustion, also, there is no tenderness of the spine on pressure.

Coccyodynia.—A very common and sometimes most distressing form of spinal irritation is what is called coccyodynia—that is, tenderness with pain, and sometimes severe neuralgia at the tip of the spine, what is called the coccyx. This is far more common with women than with men; indeed, in man it very rarely occurs. It almost always accompanies irritations of other portions of the spine.

One of the symptoms of this form of spinal irritation

is a feeling as though the spine were too long; when sitting, this feeling is a distressing one.

Peculiarities of Pain in the Back.—In neurasthenia, all parts of the back may be the seat of pain, although certain districts are more affected than others. There may be tenderness when there is no pain, and conversely pain, even severe pain, when there is no tenderness. There may be much distress in the loins and over the hips, when careful examination shows no tenderness anywhere.

This pain in the hips and loins is something quite different from ordinary neuralgia or sciatica; it rather resembles muscular rheumatism or a common cold, and is, indeed, often confounded with one or both of these diseases, even by able diagnosticians. The liability to confound irritation of the upper part of the spine at the nape of the neck with rheumatism is very great; the symptoms, indeed, are quite the same—pains, stiffness, aching, inability to move the head without discomfort. Sometimes this condition perfectly simulates wry-neck, and is mistaken for it. One of the very ablest neurologists in Germany, on being consulted by a case of irritation in the upper part of the spine, made diagnosis of rheumatism, and treated the patient accordingly. This back pain, and the tenderness that may or may not accompany it, fluctuates like all these neurasthenic symptoms: to-day they are present in full force, to-morrow they are all gone, but, on any provocation, are liable to return. They fly about in every direction; now just below the shoulder-blade; now in the centre of the spine; and at another time between the shoulder-blades, or in the middle lumbar region; sometimes with heat and burning, at others with biting penetrating sensations, or a feeling as though ants were crawling just under the skin.

Heaviness of the Loins and Limbs.—One of the most frequent complaints among the neurasthenic (myelasthenic form) is heaviness and vague aching of the loins and limbs, and sometimes of the whole body. This is a symptom hard to define in exact words, but it is very common, and it is a cause of great distress. This symptom is quite apt to follow over physical exertion, as in walking or standing, but may come on without any apparent or special exciting causes. This feeling so closely resembles rheumatism that it is often confounded with that affection by those who are unfamiliar with neurasthenia, and even one well acquainted with nervous exhaustion in all its forms, might, on first being called to a patient, mistake this heaviness and aching for a common cold, or for a rheumatic attack.[1] I have lately been consulted by a gentleman suffering from myelasthenia, where this aching of the lower part of the back and loins is almost the only subjective symptom. In sexual exhaustion, pains in the loins and limbs, not amounting to neuralgia, but sufficient to be a severe annoyance, are frequent enough, but they are not restricted to the sexual variety of neurasthenia.

There would seem to be a degree of truth in the suggestion, which has often occurred to me in studying these cases of pain in the back and loins and the lumbar region, that they were to men what so-called spinal irritation is to women. It may be said that this condition is to spinal irritation what hypochondriasis is to hysteria. The distinction is not absolute, for both sexes have the same group of symptoms. There would appear to be more cases of men who have these symptoms—pain in the back and loins, from neuras-

[1] How the symptoms of ataxy have been, and are, mistaken for rheumatism is well known to the physician.

thenia, without any tender points, any irritation of the spine—than of women. When females have pain and weakness in the back, they are more likely to have great tenderness on pressure. This distinction is, I believe, verifiable. Erb, in his chapter on this subject, raises the same query.

Shooting Pains simulating those of Ataxy.—If there be any difference between the familiar shooting, lightning-like pains in the extremities, that have so long been considered as peculiar to ataxy, and the shooting pains of neurasthenia, I have not been able as yet to find it out. Generally, these neurasthenic pains are milder than those of ataxy, but this average fact does not interfere with the fact of observation, that this difference in degree is not of itself sufficient to make it possible to establish the differential diagnosis; for the shooting pains of ataxy are by no means always severe, and in many cases of the disease do not exist at all. The mistake of writers in so strenuously insisting on the diagnostic importance of these shooting pains has been, and is, the source of terrible annoyance to physicians, especially who happen to be themselves sufferers from these neurasthenic symptoms.

The same remark applies to fibrillary contractions, which have been looked upon as indicating muscular atrophy, but which, as I have elsewhere stated, may exist as one of the many symptoms of neurasthenia.

Podalgia (*Pain in the Feet*).—One of the symptoms of ataxy in the early stages is a feeling of numbness of the feet.

Sometimes there is a feeling as though straw were at the bottom of their feet, or as of walking on velvet, or rubber, or wool. A feeling of heat and burning is also noticed; and both in neurasthenia and in ataxia it comes from the spine. It has, however, a very

different significance; in one case it means an organic, and in the others a nervous, functional disease.

In some cases, there are painful spots on the feet, either on the sides or at the bottoms. These spots are more painful from pressure of the boot or shoe; they are felt even when in bare feet or in slippers.

Pains of the feet may be observed in persons not specially nervous, but they are to be found also as symptoms and results of neurasthenia.

There is little question but that in some cases they are reflected from the stomach or genital apparatus.

Tremulous and Variable Pulse and Palpitation of the Heart (*Irritable Heart*).—In the nervous, the rapidity and quality of the pulse-beats may vary in many ways during the process of counting. Frequently the pulse of the nervously exhausted is compressible, and almost always it is more rapid than normal, ranging between 75 and 90, frequently going up to 95, 100, or 110 and more. In exceptional instances, nervous exhaustion has a very slow pulse, in the neighborhood of 40 or less, or there may be alternations between a very high and a very low pulse.

The heart is quite apt to be very irregular and irritable in many of these cases. It beats perceptibly and painfully, not only under excitement, but upon even a thought of responsibility—of undertaking anything which requires exertion; even when sitting quite still. It is so powerfully affected by the mind, so intimately under the influence of the emotions, that I have almost abandoned the habit of examining the pulses of my patients, on a first visit, for the reason that I learn almost nothing by such examinations. The excitement of seeing a stranger always puts the pulse up so much that I can hardly tell what the actual condition is. Those affected thus often suppose that they

have organic disease of the heart, and sometimes worry more over this symptom than all of the other symptoms combined.

In some cases, noises in the ears rise and fall with the beating of the heart, and when the pulse is very high the noises are very loud and distressing. In some cases, also, the pulse, a part of the day, will be very high indeed, and again, in a few hours, very slow. There is pain and oppression in the region of the heart.

[Dr. S. G. Webber[1] has recently made some interesting observations on the use of the sphygmograph in neurasthenic patients, and divides them into three classes: "First, those in which the vascular tension is nearly or quite normal. There are a few such, who seemingly have been only temporarily run down, and quickly recover.

"Another class may be formed of those who, at first, show a decided loss of vascular tone, who, after a course of treatment, regain a normal tension. These usually recover in a longer or shorter time. Those whom I have had under my care have not always regained health while under observation, but I have had subsequent information from many who have continued to steadily gain, and have recovered a fair amount of health.

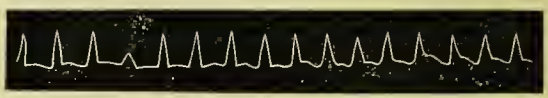
"A third class are those whose vascular tone is very much below normal, who show a variable condition of the vaso-motor system, sometimes apparently gaining a little, then losing ground, but on the whole making no substantial progress. Many of these have a hereditary tendency to an unstable nervous equilib-

[1] A Study of Arterial Tension in Neurasthenia. *Boston Medical and Surgical Journal*, May 3d, 1888.

rium, or there is some condition of the system that reacts unfavorably upon the circulation. These cases do not improve much, and whatever is gained is of very doubtful permanency; there is a lack of vascular stability which is unfavorable to recovery.

"I have had a few cases where the earlier tracings showed a nearly normal condition of the blood-vessels, but later tracings were less favorable. In such cases there has usually been some cause to which such unfavorable change could be ascribed. One patient was doing well, gaining, with a good pulse; her son-in-law, upon whom she was partially dependent, met with an accident which was nearly fatal. This shock completely upset her, and the vessels afterwards showed a very great lack of tension.

"Some of the worst cases show a great variation within a few minutes, one tracing being only slightly variant from the normal, the next, taken within five minutes, showing a great loss of tension."



No. 1.

No. 2.

Tracing No. 1 was taken from one of his neurasthenic patients, suffering from nervous depression, insomnia, headache, etc., and shows marked loss of tension. The second tracing was taken some weeks subsequently, after the patient had materially improved in all her symptoms, and shows a nearly normal tension. Dr. Webber concludes that the sphyg-

mograph is an aid in determining the amount of exhaustion; and by comparisons of tracings taken at intervals, the progress of the patient towards recovery can be estimated. A fictitious gain can be recognized, as distinguished from a real gain; no gain being permanent unless the tension of the arteries is permanently restored. A patient's future prospects of health can be calculated with more certainty by an occasional use of the sphygmograph. It is sufficient to take a tracing once in two or four weeks.]

Local Spasms of Muscles (*Tremors*).—What are called "fibrillary contractions," and which sometimes occur in progressive muscular atrophy, are also noticed in the various shades of nervous exhaustion. An individual muscle or part of a muscle may twitch occasionally or frequently, so as to cause considerable annoyance, and, in some cases, unnecessary anxiety. As these vibrations occur in the orbicularis, and other muscles of the face, these spasms are very familiar; they come and leave without warning, and suddenly, lasting all the way from a few minutes to hours, or even days. They are not very bad, sometimes, nor especially troublesome, except when they become chronic, and the twitching extends to other muscles of the face. This result is exceptional; and so far as I have observed, chronic facial spasm does not occur in those who have nervous exhaustion. I was once conversing on nervous diseases with a well-known physician, when, all at once, the orbicularis of one of his eyes began to twitch vigorously; he said it was the first time in his life that he had experienced anything of the kind; he regarded the use of tobacco as the probable cause.

The stomach, in nervous dyspepsia, may be the seat of similar spasms, which may follow any excitement

or emotion, as of fear or responsibility. A sensation like that of a reverse aura seems to go downward to the pit of the stomach from the nerve-centres, and excites spasms, apparently, of the muscles of the stomach itself.

Nervously exhausted patients are sometimes attacked with sudden tremors These tremors come on under excitement, sometimes, and then leave without any apparent exciting cause. In some cases, they seem to be periodic, at least in a degree, like chills, in malaria. Slight exertion, and, especially, unusual exertion, may bring them on.

Dysphagia (*Difficulty of Swallowing*).—Dysphagia is sometimes a result of neurasthenia I have seen it in severe cases of hay-fever, where there is great prostration. I have seen it also as a chronic condition in persons who are exceedingly nervous—coming and going—made better or worse, apparently, by no objective cause that can be ascertained.

Convulsive Movements, especially on going to Sleep.—Nervous sufferers, just as they are dropping off to sleep, are sometimes suddenly and painfully awakened by a violent, spasmodic movement of an arm, or leg, or of the whole body. This appears without any warning, and is most likely to occur when preceded by unusual excitement or fatigue. In some cases, there will be a recurrence of these spasms, so that much difficulty is experienced in getting to sleep. I have known instances where the whole body seemed to be thrown off the bed, or, rather, the sensation was as though the body were projected upward. This symptom is not so alarming as some of those who experience it believe. It indicates an exhausted, a worn condition of the nervous system; but it is not as ominous for evil as many other phenomena that belong

to the nervously exhausted state. A friend of mine—a public speaker, constantly before audiences, and always at work—with a frame of unusual size and an extraordinary capacity for enduring mental excitement and toil—tells me that with all his vigor he has been annoyed by these jerkings on falling to sleep, although he has no other evidence of neurasthenia.

It is probable that these convulsive symptoms on dropping to sleep are the effect and sign of congestion in the exhausted nerve centres, and occur while passing out of the waking into the sleeping condition, because the inhibitory or controlling power of the waking state is removed.

I know of a gentleman, now quite advanced in life, who, for half a century or more, has been regularly affected in this way, and to a degree almost past credence. Every night for an hour or more—sometimes for two or three hours—he will have a succession of these startings and jerkings, which are accompanied by a grunting or groaning sound quite distinct from a snore, and which is audible in the adjoining room.

Cramps.—One of the symptoms of certain phases of neurasthenia is the occurrence of cramps; usually in the calf of the leg, and more frequent at night. Sometimes these pains are so severe as to awaken the patient out of a sound slumber, and are only relieved by severe rubbing, or by energetic movements.

In some cases, these cramps are felt as soon as one gets fairly in bed and asleep.

Special Idiosyncrasies in Regard to Food, Medicine, and External Irritants.—When the nervous system becomes exhausted, it is apt to develop various idiosyncrasies not before observed; some of them are of high interest. Opium, for example, is likely to aggravate insomnia in many neurasthenic patients, instead

of putting them asleep, unless, indeed, very large doses are used. Formerly opium was our chief—almost our only dependence when we wished to put one asleep. Now we scarcely think of using it for that purpose in the treatment of the nervous, except when there is severe pain to be relieved. Opium for the nervously exhausted prevents sleep almost as much as coffee. So frequent is this idiosyncrasy, that, were it not for the bromides and cannabis indica and electricity, we should be utterly disarmed in the presence of these cases.

In regard to alcohol, some are so susceptible that a drop of any form of liquor is instantly and injuriously felt in some part of the system. Others, on the other hand, lose all unpleasant susceptibility to alcohol, and can bear it in incredible quantities, and may sometimes be profited by it. A lady whom I know had for years been passing through a series of symptoms of nervous depression that our most honored experts had failed to relieve. One day an ignorant and, I believe, irregular practitioner came into her house, and without inquiring into her case at all told her in a rough and authoritative manner to get the best of claret and drink it freely. The chance shot, sent in the dark and without aim, struck the very centre of the bull's-eye; the lady bought the best of claret, drank it with astonishing freedom, and found that it did for her what the best expert skill of our city had failed to do.

Coffee often acts badly with these cases. A young man who consulted me for exhaustion, with nervous dyspepsia, told me that if he drank a single cup of coffee in the morning he was unable to attend to his business with comfort, and could not calculate or write correctly. Many also are kept injured by tea.

Incidentally I will remark that *the development of*

idiosyncrasies, through nervous sensitiveness, acquired or inherited, is the real philosophy of hay fever—a malady which, as I have shown in my work on that subject, has increased as culture and civilization have increased, and which is found usually in those who have had some other nervous symptoms. As an effect of this inherited or acquired nervo-sensitiveness, there appears in one person an idiosyncrasy against bright sun-light, so that exposure to it brings on the symptoms of hay fever; in another, a similar idiosyncrasy as to dust—the most common of all the excitants of this disease; in another, against fresh hay; in another, against ipecac or other drugs; in another, against old hay; in another, against the odor of roses, or other flowers; in another, against the pollen of corn, or of some of the grasses, or of certain weeds, as Roman wormwood, or golden rod; in another, against some of the common fruits—as grapes, apples, pears or peaches, or strawberies, or raspberries, or watermelons; and so on infinitely—new developments appearing every year. On this theory I based the nerve treatment of hay fever, and predicted that by electricity, strychnine, belladonna, camphor, arsenic, zinc, and other sedative and tonic remedies, we should be able to greatly relieve and break up the attacks of this distressing disorder. For several years this prediction has been fulfilled, not only in my own practice, but also in that of other physicians.

Another idiosyncrasy developed by nervous exhaustion is *sensitiveness to cold or hot water*. A patient of mine could never bear to even dip his hands in hot water, so disagreeable were the sensations it produced; the same patient was abnormally ticklish and timid.

Dr. Harris, in a recent article on functional nervous

troubles,[1] relates a case of a man of middle life, who, on getting up in the morning, would feel entirely well; but as soon as he had washed and wiped his hands they would begin to burn, tingle, and ache very much, as when brought near the fire after exposure to snow. After a few seconds, they would begin to swell, and would continue to swell for five or ten minutes to such a degree that he could not close or use them. In the course of an hour or more the swelling would go down, but would recur whenever he rubbed his hands. The phenomena disappeared in a week without treatment.

Sensitiveness to Changes in the Weather is a very often observed symptom of nervous debility; depression of the nerves makes the body a good barometer. For twenty-four hours and more before a storm comes on, the aching and worn nerves foretell in every part of the physical organism what is coming. The sky may be clear, but the spirits are cloudy. The tenderness of bunions and corns, the aching and stiffness of rheumatic and neuralgic sufferers, the general gloominess and misery of the exhausted before and during bad weather are not imaginations, but realities as truly as small pox or the measles, and quite as much worthy of professional study and consideration.

In the Inebriate Asylum of Kings County, it has been proved, by the observations of the Superintendent, Mr. Willett, that the patients become worse as the mercury in the barometer goes down; their desire for stimulants comes upon them with special force when there is diminished atmospheric pressure.

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[1] *St. Louis Medical and Surgical Journal*, April, 1878. Dr. Harris assumes that many of the cases that he relates are of exclusively malarial origin, and that such symptoms are only seen in malarial regions. In this supposition he is quite in error,

Patients of this class are oftentimes made profoundly worse by the depressing atmosphere of dog-days, and generally by the extreme heat of our summers. The latter half of August is especially severe on these cases. Neurasthenics are painfully sensitive to both heat and cold—mid-summer and mid-winter distress them about equally; they are very easily chilled by weather even the reverse of cold. They are very sensitive to exposure to cold, or over-exertion of any kind. Getting over-fatigued has, for a large number, the same effect as being exposed to cold. Not only does the heat of mid-summer bear heavily on their resources, but they suffer positive and severe pain from simple heat, even when they are not exercising. In short, their margin for bearing the extremes of temperature is a very narrow one. In winter they must dress more heavily, in summer more lightly than others.

A person nervously exhausted is far more likely to be prostrated during the extreme heat of our summer; and when once prostrated, all his symptoms are made worse; *indeed, sunstroke may, and very often does, bring on many symptoms of neurasthenia in a person previously well.*

Localized Peripheral Numbness and Hyperœsthesia.—In any portion of the periphery—the face, the arms, the ends of the fingers, the thighs, the legs, and the toes—there may be, in nervously exhausted patients, persistent numbness of a definitely localized character, or excessive sensibility, similarly localized. In some cases, this local peripheral hyperæsthesia amounts to a very distressing disease. I was once consulted by a physician who had hyperæsthesia of the left hand, caused apparently by local injury acting on a nervous diathesis. The condition was very obsti-

nate, and caused much distress. I once had under my care a lawyer who had a burning feeling in the thumb and fingers of the right hand, with pain sometimes running up the arm. At first I suspected that the symptoms were premonitory of writer's cramp. The patient went to Europe and took various treatments under the direction of Charcot and other neurologists without important benefit; but is now able to pursue the routine of his profession. I have now under my care a gentleman who has had, for a long time, a sensation of numbness and burning at the ends of his thumbs, at the bottom of the heel, and around the legs and ankles. These symptoms are accompanied by the usual symptoms of cerebral exhaustion and congestion —pain in the head, a feeling of fullness and pressure, and mental depression. Sometimes there are flying, stinging, pricking sensations in the feet and legs, that caused one European physician to make the diagnosis of "flying gout." With hygiene and electrical treatment, this patient has improved in a manner most encouraging; and, what is of chief interest just here, the improvement in the peripheral symptoms has exactly kept pace with the improvement in the brain symptoms, showing their common nature.

Symptoms of this kind excite fear and dread—oftentimes as indicating grave and structural brain disease, or as premonitory of apoplexy; but, in the majority of cases, they are the results and signs of functional, not structural trouble, and occur in people who live to old age.

I have seen a number of cases where there was numbness on a limited area of the thigh, and all have recovered or permanently improved without a very bad history.

Among other special symptoms coming under this

head, I may mention a sensation as though a pin or many pins were just touched to the skin; a tendency for the legs and arms to "go to sleep," under far slighter pressure than in the normal state of health, is observed in cases of this class. Sitting a very short time in a hard chair, riding in an omnibus, or car, or carriage, may cause the foot to get asleep, when, in entire health, no such effect would have been produced by the same cause.

I have now under my treatment a man who often wakes up at night with a strong but transient sensation of numbness, confined to the track of the ulnar nerve, in the little finger and inner side of the third finger. In other cases, other nerves of the arm may be involved, and all the fingers may be numb. Numbness of this kind usually goes away after a little shaking and rubbing. It is more likely to come on at night from lying on the arm; but in the daytime, also, it may occur when the arm rests for a few moments over the back of a chair. When one is specially exhausted or worried from any cause, this transient and local numbness is more likely to show itself. The pathology of this state is probably, if not certainly, an obstruction in the passage of the nerve force through mechanical pressure. In the highest health, sufficient pressure will produce this condition, and if the pressure be kept up, permanent paralysis may occur; but in nervous exhaustion, when the nerve force moves slowly and with very little *vis a tergo*, much slighter pressure suffices to obstruct its passage—just as water, flowing slowly through a rubber tube, can be checked by a gentle touch of the finger, but if flowing rapidly and with force, needs firm pressure or a stop-cock.

A Feeling of Profound Exhaustion Unaccompanied by Positive Pain.—Attacks of a sensation of absolute

exhaustion, as though the body had not strength to hold together, comes on very often in the nervously exhausted. This feeling of exhaustion, though not exactly pain in the usual sense of the word, is yet, in many cases, far worse than pain. These attacks may come on suddenly without warning, and may suddenly disappear. In the morning one may be able, or feel able, to run on a wager; in the afternoon of the same day, sitting quietly in a chair seems to be an exhausting effort to which every nerve and bone and muscle is unequal. The *going-to-die* feeling is quite common in these cases, and at first causes alarm. It may be experienced either in the day or at night, on going to sleep, or awaking from sleep. This symptom, like many of these symptoms, appears at puberty and at the change of life; it indicates that the system is straining under the burden placed upon it.

Neurasthenic patients cannot depend upon themselves. One day they can do with impunity what on the following day brings about distressing results. At one time they may be able to work hard, take long walks, and use the brain severely—but, under the same circumstances, in a few days they find themselves unequal to anything of the kind. One may go on for a long time almost reckless in diet, when suddenly an ordinary article of food causes distress. When planning to go upon a journey or to undertake any responsibility of any kind, they cannot tell a day beforehand whether they will be equal to it—their strength is liable to drop away from them at any time when it is needed.

Unwonted and unaccustomed muscular exercise is especially irksome to neurasthenic sufferers. They can do very well in an ordinary routine, but stepping out of this routine, and attempting something new to them,

they quickly become wearied. The very narrow margin of muscular force is soon exhausted. This applies to both nervous and muscular exertion.

Ticklishness.—Nearly all persons are susceptible to the form of irritation that we call tickling; but in nervous exhaustion this susceptibility may become a severe annoyance. A gentleman once under my treatment for many of the symptoms described in this paper—spinal irritation being prominent—was so ticklish on the breast, stomach, and abdomen, that it was very difficult—indeed, quite impossible—to apply electricity to those parts with any satisfaction.

Vague Pains and Flying Neuralgias.—The so-called "growing pains" in the young are of this class; the force in the system is insufficient to maintain growth without suffering a degree of impoverishment which expresses itself by a subdued growl of pain.

Waving, beating, rolling sensations are often felt by the neurasthenic, even when not exactly hysterical. Shooting neuralgic pains in the limbs, or nearly all parts of the body, cause much suffering with this class of patients.

General or Local Itching (*Pruritus*).—Itching occurring without any visible change in the appearance of the skin, is a common experience; but is not regarded as pathological, unless it be quite severe and persistent. In certain nervous states, it becomes an element of positive distress. Itching of the scalp sometimes immediately follows any prolonged and exhausting intellectual exertion. I know a man who was once troubled with a general prickly feeling all over the body, and was sufficiently annoyed thereby to take treatment for it. Certain regions of the face, arms, and legs may be the local seats of itching, which varies with the general condition of the nervous system. A lady

patient of mine, of neurotic inheritance and temperament, was liable to terrible attacks of itching on a limited region of the arm; which attacks followed quickly, almost instantly, after nervous disturbance, and were not accompanied by the appearance of prurigo.

In the arm-pits there is sometimes severe itching in neurasthenia. I have lately had under my care a case of long-standing neurasthenia, in which itching in the left axilla was one of the most harassing of all the symptoms. The symptom quickly yielded to large doses of sodium bromide, without any local applications.

General and Local Chills and Flashes of Heat.—Disturbance of circulation both follows and accompanies disturbance of innervation. Creeping chills up and down the spine are common-place; but there are symptoms allied to this not so familiar. Thus Dr. J. H. Sterling had under his treatment, at one time, a lady whose knees were literally as cold as ice—that is, they felt to her as cold as though they were packed in ice. I knew of a case where there were limited and small areas of heat and cold sensations on the arms. I have also known cases where the ankles were cold, even when other parts of the body were comfortable. After fatigue or worry, the ears, or one ear, and one foot or both feet, and one hand or both hands, may be cold to the touch—even in warm weather, and in a hot room, or when thickly wrapped up. Patients in this state are, indeed, like Harry Gill, very, very cold, no matter what they put on; the skin may be almost blistered, as they stand near the fire, and yet chills are running all over them.

Long writing, which may produce symptoms of writer's cramp in others, may, in the nervously ex-

hausted person, cause coldness of the fingers, hand, or arm, especially when the arm is elevated. Yet more minutely may this symptom of coldness be localized; spots as small as the point of a pin apparently—especially on the face—may be pinchingly or stingingly cold—this sensation quickly appearing and quickly disappearing.

Cold Feet and Hands are symptoms that the neurasthenic complain of in at least half the cases.

Nervous Chills.—Attacks of chills, in many respects resembling chills and fever, especially the dumb ague, are often experienced by a certain class of neurasthenic sufferers.

A clergyman, under my care during the past year, was attacked in this way, and, when I last saw him, could not tell whether the symptoms were malarial or simply neurasthenic.

My friend Dr. Lente tells me that, in cases of this kind, he has only been able to make the diagnosis by the use of the thermometer, which in the cases of neurasthenic chills indicated a different temperature from that of malarial chills.

Sudden Giving Way of General or Special Functions.—The treacherousness of nervous exhaustion is one of its most constant characteristics; its symptoms lurk in ambush and burst upon us when least looked for, when we fancy ourselves utterly and forever delivered from their presence. The neurasthenic patient cannot, therefore, trust himself a half-hour or even a moment in advance. In the morning he may be, or feel, able to walk five miles; in the afternoon, from no traceable cause, it may be a task to cross the street. Even in the midst of any labor—mental or muscular—his strength gives out as suddenly as if he were struck by lightning. I knew a man prostrated for two years

with profound neurasthenia, who, if he rose and crossed the room, might become absolutely aphonic. Two ladies have been under my care who could walk readily for perhaps a block or more, when instantly, and without warning, their limbs would give way beneath them.

Temporary Paralysis.—Temporary functional paralysis of certain muscles on arm or leg, or of the muscles of the larynx, are sometimes noticed in cases of neurasthenia.

In one of my cases, paralysis of an arm, lasting but a short time, was the first noteworthy phenomenon of the disease.

There is no evidence that paralysis of this kind depends on any structural disturbance of the nerve-centres.

These temporary paralyses sometimes recover very suddenly and unexpectedly.

Diseases of Men (Involuntary emissions, partial or complete impotence, irritability of the prostatic urethra).—Occasional seminal emissions in the healthy and unmarried are physiological—that is, they are not symptoms of disease. Such involuntary discharges, when excessively frequent, may be both results and causes of disease, indicating an abnormal, usually an exhausted state of the nervous system, and in turn reacting on the nervous system, increasing the very exhaustion that causes it. Such, in general, is the philosophy of all, or nearly all, cases of frequent involuntary seminal emissions.

An attack of *acute* disease of any kind may leave the system, during convalescence, in a state where seminal discharges may take place with far greater than the normal frequency; on return to health, this symptom, with all other symptoms of debility, disappears.

Chronic neurasthenia is often accompanied, as one of its symptoms, by seminal emissions or other evidences of irritability of the prostatic urethra, even in those who are married; indeed, some of the most persistent cases I have ever seen have been in married men. In almost all cases of long-standing nervous exhaustion, the reproductive system necessarily participates, sooner or later, either as a cause or effect, or as both. In very many cases, local disease consequent on abuse of these parts is a prominent exciting cause of general nervousness.

Impotence—partial or absolute—when it appears as an effect of neurasthenia, as it frequently does, usually recovers with the improvement in the nerves, sometimes without special treatment, and in almost all cases is relieved by proper treatment faithfully carried out. It is, indeed, more relievable than many other forms of genital disorder.

The relation of the male genital function to the nervous system is a subject of the highest interest, and of great complexity. It is a department of medical investigation that has been for too long neglected.[1]

Diseases of Women.—The diseases belonging to woman, as woman, may be either the causes or effects of neurasthenia.

It has been the custom to regard the various nervous symptoms with which women suffer, as the results of any uterine disease with which they may have been afflicted; but the wiser gynæcologists of the present

[1] I may be here allowed to refer to a series of papers that I have been publishing (Jan. 25th to Dec. 6th, 1879) in the New York *Medical Record*, on Nervous Diseases connected with the Male Genital Function. (These papers have been gathered together and revised, and are now issued in book form under the title of "Sexual Neurasthenia" by the publisher of this volume—ED.)

are aware that, with women as with men, disease of the reproductive organs may be a result of exhaustion.

The various congestions and displacements and inflammations, and especially uterine and ovarian irritability, may, and do, come from mal-nutrition, which mal-nutrition is a result and part of general mal-nutrition of the whole system. Irritability of these organs, of the ovaries, of the uterus, is sometimes analogous to the condition of the brain which we call cerebral irritation, or of the spine, which we call spinal irritation, and will not yield to purely local treatment. Cases of this kind are sometimes treated for a long time without any satisfaction, simply be cause the general constitutional treatment is neglected. Constitutional treatment alone, if judiciously and faithfully carried out, may sometimes cure these cases without any local application, or with but little, as has been lately shown by one of our prominent gynæcologists, Dr. Goodell.

Oxalates, Urates, Phosphates, and Spermatozoa in the Urine.—The relation of oxalate of lime to various nervous symptoms was long ago pointed out by Golding Bird, and the importance of examining the urine for the deposits of the oxalates was strenuously insisted on by him; but the true relation of such deposits to the nervous system seems not to have been fully understood either by him or by those who have since written on the subject.

As a matter of routine I have, for years, been accustomed to have the urine of my neurasthenic patients examined by experts, and in the majority of cases it is found that the oxalates, and, in some cases, the urates, are in great excess. Amorphous urate deposits are noticed, also uric acid crystals.

The term "oxaluria," so often applied to this condi-

tion, is quite analogous to the term "spinal irritation," as applied to tenderness of the cord with accompanying symptoms, so often observed in neurasthenia. To the employment of such terms there can be no objection, provided those who use them understand that, in scientific strictness, they do not mean disease of a distinct character, but only results and expressions of neurasthenia—mal-nutrition of the nervous system. The urine of the neurasthenic is often, if not usually, abnormally acid; and spermatozoa are frequently found. In a philosophic sense, these oxalates and urates in excess, and the acidity, are, like spinal irritation, cerebral irritation, neurasthenia, asthenopia, and dyspepsia, results, effects—in a word, symptoms—and if the cause at all of other symptoms, are secondarily so.

There is, indeed, a special phase of neurasthenia, to which the term sexual neurasthenia may well be applied. Spermatorrhœa is itself a cause of neurasthenia.

Gaping and Yawning.—As evidences of temporary fatigue, gaping and yawning are familiar enough, even though their physiology may be obscure. In organic disease of the brain, also, frequent and prolonged gaping has been noticed.

In one case of glosso-labial paralysis that I saw a number of years ago, this symptom of gaping was so frequent, and the act so prolonged, as to be ludicrous.

In neurasthenia, gaping, yawning, and stretching may appear like the other symptoms mentioned, and like them also the attacks come and go; they are quite apt to follow over-exertion or excitement, even when there has been no loss of sleep. A neurasthenic patient, now under my care, tells me that after long reading a newspaper in the morning after breakfast,

he is troubled with gaping, though no other evidence of weariness annoys him; in his case the eyes are asthenopic, and prolonged use of them sometimes brings on various symptoms.

Appearance of Youth.—Persons afflicted with neurasthenia, very often, and, I think, in the majority of cases, where the condition is long-standing, look younger than their years; they bear the weight of time more easily than the phlegmatic and the strong; and when between, say thirty-five and forty-five, will pass for five or ten years below their actual age. I have reached this generalization not hastily, but after much observation and reflection. Constantly I find myself astonished when a new patient, whom I have never before seen, tells me his age. I observe that those who have had a long battle with their morbid feelings, who have been perhaps disabled, crippled, exiled by nervous incapacity, look ten years younger than their vigorous friends. The neurasthenic are, as a rule, less wrinkled and worn; they have less fat and muscle that furnish the materials for flabbiness and coarseness of feature. Their skins are thinner and softer, and show the blood more readily. They are also less likely to be attacked with those degenerative changes in the blood-vessels and the skin that are the signs and results of age. In a word, they look young for the same reason that they live long.

There is a still wider generalization that can be verified—namely, that the nervousness that attends civilization is everywhere accompanied by this appearance of youth. The higher classes look younger than their years, the lower classes look older than their years. Some time since, when I was connected with the Nervous Department of Demilt Dispensary, New York, I noticed that the majority of the patients looked from

five to ten years older than they were. This was true of both sexes, and in nearly all forms of nervous disease. Those between twenty and thirty appeared to be thirty-five or more, and only repeated questioning in some cases would convince me that there was not either ignorance or deception. But scarcely any of these patients were neurasthenic, for in that class neurasthenic and allied affections are very rare.

Rapid Decay and Irregularities of the Teeth.—The *rapid* decay of the teeth is one of the symptoms of nervous exhaustion. Although a nervous person may have an excellent set of teeth, providing they are well taken care of and properly filled every time a cavity appears, yet early decay of teeth in the nervous is to be ranked as one of the results of an impoverished state of the nervous system.

That premature decay of teeth is a result of civilization is an undeniable fact; and in those whose constitutions are depleted of force the teeth are rarely good, and they are only kept in fair working order by the great skill of modern dentistry. Dentists are the barometers of civilization; their rise and prosperity is one of the most instructive facts in modern sociology. American dentists are the best in the world, because American teeth are the poorest in the world.

Among all classes of brain-working in-door living Americans the teeth usually begin to decay before the age of 20; and it is quite rare to find a nervously exhausted person, however careful he may have been with his teeth, who can exhibit a really sound set at the age of 35 or 40; it is more probable, that, if he have any teeth of his own at all, very many of them are filled; perhaps some of them in several places, and their endurance will depend upon the skill with which the filling has been done.

Irregularities of the teeth, which are the result of deficient nutrition of the jaw, are likewise barometers of the nervous constitution. The jaws not being properly fed or nourished, the teeth fall out of line.

In Indians and negroes the teeth decay, but not so early nor as rapidly as in the civilized white. Irregularities of the teeth likewise, according to Norman W. Kingsley, our best authority on that subject, are rare in uncivilized people.

Hemi-Neurasthenia.—I have discovered that neurasthenia sometimes affects one part of the body more than the other; to this difference I have applied the term hemi-neurasthenia. Thus there may be a special degree of pain on the left side of the head, the eye on the same side may be weaker, more painful on over use, more severely photophobic, the lid may drop lower, the eye not open so fully and freely; the arm and the leg on the same side may be much weaker than on the other side; likewise there may be a disposition to tremor in both of the extremities and the muscles of the face on one side. The noises in the ears, which I have described as one of the symptoms of neurasthenia, may be restricted entirely to the right or the left side, even when there is no demonstrable disease of the ears.

Likewise muscæ volitantes, or specks before the eyes, may be, and indeed often are, confined to one eye, or are very much more marked in one eye than the other. The symptom of sick headache is as a rule far more common on the left than on the right side, although it may appear on both sides in the same individual; likewise the symptoms of chilliness, of creeping, crawling, of muscular spasms, fibrillary contractions, localized heat and cold, may be especially observed on one or the other side of the body. The

pains in the calf of the leg and cramps may be restricted to the right or the left side, or may be far more decided on one side than on the other. One leg or one foot, or one arm or hand, may be cold for several hours or days, while the limbs on the other side are of normal temperature. One ear may be red and hot, the other may be of a normal color and temperature.

Hemi-anæsthesia of one side of the body is quite a familiar symptom, especially in hysteria; but very many other phases of nervous debility may be likewise confined to one side of the body.

Course and Caprice of Symptoms.—Sufferers from neurasthenia oftentime wonder and complain that they have so many symptoms; that their pain and distress attack so many parts and organs; but when we remember that neurasthenia, once in the constitution, is liable to attack any one or all the organs and functions, the wonder becomes rather that they escape so many of the symptoms; it is in truth one of the mysteries of the disease, that those who are afflicted in some directions are well in others. Thus one who is comparatively neurasthenic, and has been afflicted for many years, may not suffer at all in the eyes, nor in the ears, nor perhaps in the stomach; all the symptoms may be concentrated in the spine and the lower extremities, with the genital organs or with the reproductive system, or there may be attacks of severe mental depression; and it is worthy of note that those organs and functions that are not attacked with neurasthenia, that are passed by in the storm that sweeps through the system, are as strong and enduring as in an entirely healthy person. One may have great mental depression at times, or at all times may have neurasthenic asthenopia, the various forms of morbid fear,

general debility in its various phases, and yet be capable of great muscular endurance; able to walk long distances, or of working energetically in the fields; another with the same disease, with the symptoms differently proportioned or divided, may be capable of constant mental effort, although physical exertion of any kind is wearying. The way in which the stomach escapes is exceedingly interesting; I sometimes wonder at the digestive power in these cases. I remember a consultation I had with a physician in regard to himself. We took dinner together, and when I saw the quantity and quality of food, much of it being of an indigestible sort, of which he partook with the greatest relish, I thought that I would be willing, almost, to take upon myself all his symptoms, which were numerous and of long standing, and of a crippling nature, for the sake of his digestive capacity.

Another symptom which is very capricious in these cases is that of sleep: usually the neurasthenic do not sleep as well as the strong; in many cases it is their most painful and annoying symptom, but the exceptions are not rare in which, although almost all the others symptoms appear, sleep is perfect; soon as they touch their pillow they drop into sound slumber, without the assistance of artificial aids; and rarely ever wake up until full morning, and those who are thus fortunate may be the feeble with many fears, may have the symptoms of myelasthenia, may be greatly depressed mentally, may have sweating extremities. muscular debility, disturbances of the organs of special sense, such as specks before the eyes, deceptive sounds and tastes, neurasthenic voice, and all the various functional disorders of the genital system.

It is interesting also to note what may be called the evolution of the symptoms at different periods of the

disease. In a long course of neurasthenia, certain symptoms arise, reach their height and fall away, and are forgotten, but are replaced by other symptoms, which may and may not be of a graver character. There would seem to be a sort of progress through which neurasthenia advances from its early to its late stage, such change on the average may be stated as follows:

The first symptoms occur oftentimes in the youth, before or after puberty; the most frequent symptom at that stage is sick headache; then comes a period of nervous disorders, often preceded or followed by genital disturbances, sometimes by hypochondria; then, after some changes, come sleeplessness and signs of cerebral congestion, attended, it may be, with asthenopia and other disorders of the nerves of the special sense.

One may be dyspeptic perhaps for years before the spinal cord is in any way disturbed. Symptoms of myelasthenia as here described, in the upper and lower part of the back and spine; tenderness; morbid sensations of the lower limbs. Shooting pains may not appear until the sufferer has for years been passing through the process of incubation, in the different stages of dyspepsia, cerebral hyperæmia, seminal weakness, masturbation, and so forth.

Symptoms seem sometimes to wear themselves out, and the patient passes entirely out of them; and they may not reappear, although the average health of the patient has been, on the whole, declining rather than improving. A physician who consulted me for many years' standing symptoms of neurasthenia, gave a perfect history of the disease; but when I asked him if he was subjected to mental depression, he replied: "I passed through all that;" and this I observe often-

times of neurasthenics in middle life, that symptoms of the early stages of the disease, such as mental depression and dyspepsia, have ceased their annoyances.

The sudden and unaccountable appearance of new symptoms is an interesting fact, and one which, to those who do not understand the philosophy of the disease, oftentimes causes great alarm.

Patients do not comprehend why they should have a certain symptom, such as, for example, local itching, or specks before the eyes, cerebral fullness, or pain in the back, or shooting pains in the limbs, or coldness of the extremities; and because they have not had them before, they wonder that they should have them now, forgetting that with disease, as with school teaching, there must always be a first time. The true philosophy of the disease shows us that there is no especial mystery in all this; that we should wonder quite as much why we should not have symptoms as that we should have them.

Time of Life at which Neurasthenia is most frequent.—Neurasthenia seems to be most common between the ages of fifteen or sixteen and forty-five or fifty. It is found in those under fifteen, and those over fifty; especially between fifty and sixty; but, comparatively speaking, it is rare and different in its character at extremes of life. This is a fact of observation, without regard to any theories on the subject; and is especially interesting as suggestive of the intimate relation between this condition and the reproductive system. Infants and children have convulsions, cerebral diseases, spinal complaints. paralysis, chorea and anæmia, but very rarely neurasthenia, as here described; the aged have anæmia, paralysis, and decrepitude, but not any considerable number of the symptoms referred to neurasthenia. In the exhaus-

tion of old age there may be great debility, but it is not accompanied with the symptoms which we find in neurasthenia, which occur in those between the ages of fifteen or sixteen and sixty.

Frequency of these Diseases.—In estimating the relative frequency of diseases of this kind, statistics are of little value. We can judge only by the observations of physicians who are familiar with these maladies, and who are accustomed to diagnosticate and treat them

There are very few physicians of large experience in general or special practice, particularly in our great cities, who have not seen many such cases, even though they made no effort at diagnosis or treatment.

Erb in Heidelberg tells me that he has seen several hundred cases of neurasthenia alone, and his practice comes from all parts of Europe, and especially from Germany, where these affections are far less common and annoying than in the United States. Probably no single fact illustrates the frequency of this disease more impressively than this, that at all times while on duty, I have a number of physicians, who are themselves sufferers in this way, under my care. Many of these medical patients have been afflicted for years, without ever reaching the true diagnosis of the condition, and in not a few instances, the real debility and distress are heightened and intensified by fear of impending disablement. Overworked and overworried physicians are quite apt to develop this disease, and for reasons elsewhere stated (Chap. III.) are also more likely to develop at the same time hypochondria or pathophobia. At least one of every ten of those who consult me for neurasthenia are physicians.

The above-detailed symptoms are not imaginary, but real; not trifling, but serious; although not usually or

immediately dangerous. In strictness, nothing in disease can be imaginary. If I bring on pain by worrying, by dwelling upon myself, that pain is as real as though it were brought on by an objective influence. Many of these symptoms show quite a different significance from what the patients fear in regard to them; but they are none the less a real annoyance, and in some instances of a distressing and crippling nature, depriving one of happiness and usefulness, and enveloping all the future in gloom.

When a person with an irritable heart fears organic heart disease, and asks for an examination, the discovery that there is no organic disease of that organ does not invalidate the fact that he does have certain symptoms connected with the heart, even though they are not of a perilous character.

Not a few of these symptoms are physiological—a part of, and consistent with, health; and are themselves, in a certain degree, either the result or cause of disease; such symptoms, for example, as perspiration, blushing, weeping, gaping, or yawning. When they occur naturally and mildly, and are not associated with distinct morbid phenomena, they are physiological, and do not suggest disease, any more than laughing or sleeping; but when these symptoms occur with a frequency relatively great and excessive, out of proportion to the exciting cause, or are associated with other significant signs of nervous disease, they are pathological, and are to be considered in making out our diagnosis. Laughing and crying, for example, are physiological processes, but in attacks of hysteria they are almost diagnostic. It is, therefore, scientifically and practically no objection to any of these symptoms that they may be physiological.

How such Cases are usually Diagnosticated.—Cases

with any one, or many, or all of the above-described symptoms are diagnosticated and treated in all kinds of ways. The most frequent diagnoses are hysteria or hypochondriasis or anæmia. Others, who give more attention to the nervous system, make more special forms of diagnosis, such as spinal irritation, cerebral anæmia, cerebral hyperæmia, or, perchance, spinal hyperæmia. If an oculist were consulted for any symptoms connected with the eyes, the patient would have been told, formerly, that there was nothing the matter—that there was nothing to be done, unless it be to rest the eyes a little while; more recently, however, glasses would be prescribed; and possibly, also, some tonic treatment. In the way of therapeutics, such persons would be advised to do nothing; to go to their work—to take several years' vacation in Europe—to go to some famous baths—to take strong purgatives—and so on, according to the physician consulted. In rare instances, the sufferer might consult a physician who should understand what his disease was, practically, although having no name for it, and should advise treatment, on the whole, adapted to the case. That it is possible for a patient suffering from these symptoms to obtain such opposite and inconsistent treatment from some of the best physicians must prove the importance of restudying the whole subject, even to those who do not accept all the philosophy of this work.

Patients of this class very naturally, therefore, often become "rounders," going from one physician to another, testing all waters and baths and climates; on the part of some of their friends getting too little sympathy, on the part of others, too much. If but once a full diagnosis be made in one of these cases, and the patient can be made to know authoritatively that,

although he is really suffering and in need of treatment and well-directed hygiene, he is not in danger of organic, hopeless disease, he becomes oftentimes a new being.

Multitude of the Symptoms.—The objection which some have brought and more will bring against this picture of the neurasthenic state is, that it has such a multitude of shapes and phases. We would not complain if other studies of the nervous system were criticised in the same way. It is a law which is deduced from all knowledge of the brain and spinal cord, and of the reflex action of the nervous system in general, and which is confirmed and established by our own observation of the diseases of this part of the body, that central troubles affecting large tracts of the nervous system, or even limited tracts, are liable to have an immense array of symptoms, and to be very capricious in the display of them. The symptoms of ataxy under modern observation have grown until they make almost a volume. Even as I write, I receive a fresh pamphlet from Erb, of Heidelberg, on ataxy. Now neurasthenia affects a larger portion of the system than ataxy (with the difference only that one disease is functional and the other structural); and it should, therefore, have at least as many symptoms, if not more; and those who study neurasthenia as thoroughly as they study ataxy, will have no difficulty, in the course of time, in confirming all that is here stated in regard to it. They will not see all the symptoms in the first case, for some of these phenomena are rare; but in time they will see all, or nearly all, and will become familiar with them.

These symptoms of nervous exhaustion are, in a measure, antagonistic to each other—and nervous exhaustion is itself antagonistic to many other diseases

—especially of the acute and inflammatory sort. Diseases prevent disease; diseases cure disease; diseases are antidotes to disease. To this numerous class of sufferers it is, then, a consolation that their disease is itself medicine and hygiene. Opium-eaters, I am told, are comparatively exempt from malaria, and in the East pass unharmed through the epidemics of cholera. Likewise alcohol inebriates do not usually experience all the symptoms of nervous exhaustion. Alcohol seems to act as an internal counter-irritation. Excesses of any kind that injure us in one way may save us from being injured in other ways.

Correlation of Nervous Symptoms.—It would seem that there may be a scientific basis for the popular belief that diseases relieve and cure each other; that symptoms in one part of the body take the place of symptoms in another part. It would seem, indeed, that diseases which are here described represent a certain amount of force in the body which, if our knowledge of physiological chemistry were more precise, might be measured in units; and this force can be strongly concentrated in one part of the brain or the spine, or be scattered in different portions of the periphery. In this way, we can account on just physiological grounds for the appearance, for example, of pain in the head, as soon as pain in the stomach leaves us; of alternation between the head and the stomach, or pelvic pain, for the substitution of visceral for cutaneous disorder, and *vice versa;* for the relief and cure of many disorders by an attack of acute disease, such as hay-fever or diarrhœa; for the revolution worked in the constitution by a protracted sickness; for the exemption in neuralgic disease from so many inflammatory troubles; for the restriction of the effects of disease of the reproductive system, in many cases, to the parts affected.

and in some cases for its diffusion through the whole frame—and, most interesting perhaps of all, for the relief obtained by counter irritation, through blisters or actual cautery, or through hydro-therapeutics, or through applications for electricity. These nervous symptoms, indeed, play a sort of game of battle-door in the body, in which the disagreeable sensations are driven from one part to another.

The *periodical and rhythmical* character of some of these symptoms is of much interest.

While this work is being revised, I have been consulted by a clergyman of middle life, who, with many other symptoms of neurasthenia, is troubled with attacks of special and peculiar depression, lasting for about a day, more or less. These attacks are ushered in usually by a feeling of mental exaltation; then come diplopia, with other abnormal phenomena of vision, and so on through quite a regular series of nervous symptoms. Prostration from heat was the original cause of the attacks, which are now brought on by any mental or physical exhausting or disturbing influence. I once had under treatment a young man who had attacks of nervous depression every day about noon; they lasted but for a short time, but were as periodic as chills and fever—and like chills, and like the preceding case, passed through definite stages.

A student of medicine, now under my care, has had attacks of profound weakness in the region of the sacrum and coccyx, with unpleasant sensation in the head, coming on at eleven o'clock in the morning, and lasting for but a short time.

In these cases we at first suspect malaria; but neither the history nor the results of treatment in some of my cases of rhythmical symptoms are in harmony with the theory of malarial origin.

Nervous exhaustion, with many or all of these symptoms, is compatible with the appearance of perfect health.

For this reason, as well as on account of the slippery, fleeting, and vague nature of their symptoms, patients of this class get but trifling sympathy. Sometimes they are fat and hearty, and have a ruddy, vigorous, strength-suggestive appearance; sometimes also they grow fatter as they grow worse. Noticeably the disappearance of symptoms in the stomach, and the appearance in their stead of symptoms in the brain and spinal cord, is followed by increase in weight that deceives the friends, the physician, and even the patient himself. Thus it happens that patients get the least sympathy when they most need it.

Four years since, a prominent politician consulted me for a medley of nervous symptoms induced by sunstroke—a not uncommon cause of neurasthenia. He was an enormous, Herculean man, but gave a history that would well have befitted the most delicate and hysterical woman.

A physician who once called upon me and had opportunity to see a number of other cases that came on the same day, remarked with surprise, "Your patients are giants;" and to some of the worst cases that were under my care this statement will justly apply.

It cannot be repeated too often that a patient may be of great size and weight, and have a muscular development both large and hard, capable of great physical endurance, and at the same time be in his nervous system as weak as a bed-ridden, hysterical girl.

CHAPTER III.

THE NATURE AND DIAGNOSIS OF NERVOUS EXHAUSTION.

The importance of making a differential diagnosis between symptoms of neurasthenia, as detailed in the previous chapter, and the symptoms of organic or structural disease of the brain and spinal cord and peripheral nerves, is incalculable. Very many of the symptoms of functional and organic disease are the same, or apparently the same, and there is an easy liability to confound them, especially when, as is often the case, the patient or the doctor is disturbed in his judgment by severe apprehensions. To make such a differential diagnosis is sometimes the severest test to which the neurologist can be brought, and one of the highest value for the happiness, the plans, and the whole future of his patient. The not being able to meet this test has been, and is now, in all countries as well as our own—particularly in the last twenty-five years—a cause of frequent errors in the advice—both hygienic and medical—given to patients; for both the prognosis and treatment of neurasthenia is oftentimes quite the opposite of the prognosis and treatment of incurable cerebral, spinal, or peripheral nerve lesions. If we were compelled to be guided by isolated symptoms, it would be impossible, in many instances, for human skill to make such differential diagnosis between neurasthenia and some of the diseases that it

simulates; for the symptoms, considered by themselves, are sometimes precisely the same, and of themselves alone would not point towards the solution of the problem. The tendency of neuropathology is not toward, but away from, the idea of single pathognomonic symptoms. It is by considering groups of symptoms in their relation to each other, and to the history of the case, that we make out, in recent times, the diagnosis of ataxia, or of any of the different forms of spinal disease, or of hay fever. Whenever any of the different phases of professional cramps develop, such as of musicians, or writers, or painters, or telegraphers, or designers, or engravers, or artists, or barbers, or counters of money, there are single symptoms in any one of these diseases that, in themselves, might mean rheumatism or neuralgia, or neuritis, or diseases of the joints or spine; and very often, indeed, this mistake in diagnosis is made in spite of all the literature and teachings upon this subject.

A number of times I have been consulted by medical men in regard to themselves, for symptoms which for a long time had kept them in a state of alarm, if not despair, lest they might be the precursors of incurable disease of the brain or spinal cord; and after an interview I have had the pleasure of assuring them, in most positive language, that it was not only improbable, but well-nigh impossible for them to get up, if they should try, any organic or structural disease of the nervous system; that they might continue in their chosen profession as long as they should live—which might be and probably would be many years—provided only they could carry out certain lines of treatment.

On the stage road between Ticonderoga and Lake George, travellers are pointed out a natural phenom-

enon in the shape of a double tree, the two divisions of which grow up side by side, and so close together that they appear as one trunk, until at some distance from the ground they diverge, one into a maple and the other, I believe, into an elm. Just so functional and organic affections may have at the outset the same symptoms, and for a time may run along together side by side, perfectly parallel, and to an ordinary observer appear absolutely identical. In connection with this subject, the German writers have especially made the mistake of assuming and of teaching that the *causes* of functional disease—such, for example, as sexual excess—are also likewise the causes of organic lesions such as are found in ataxy and muscular atrophy. These errors in diagnoses have been copied by authors in other countries and languages, and physicians and medical students, on reading these works and listening to such teaching from their professors, begin most naturally to ask themselves whether they are going the road that leads to nervous destruction; and, on a little reflection, there is but slight difficulty in recalling and conjuring up almost any number of symptoms which, according to the books, ought to make them permanent and hopeless invalids, if not send them to a speedy grave. The more intelligent a physician is, and the more thoroughly he keeps up with the literature of his profession, the more liable is he to fall into this annoying and alarming mistake.[1] One of the

[1] That the disease may last many years there is no doubt; that it does not often lead to organic spinal disease is equally clear.

On this subject Erb does not speak so positively. He says: "I am unable to state whether they are incurable cases, and whether the disease may last a great many years. I also am in doubt whether the disease can pass into any tangible chronic form of spinal disease (myelitis, sclerosis, gray degeneration. . . Most patients are hypochondriacal in their feelings; and, if the physi-

best physicians I know—a man of large experience and of general culture and accomplishments—consulted me a number of years ago in a state of intense depression and alarm, on account of spinal exhaustion, which, in his anxiety, he mistook for hopeless spinal disease. I had the great pleasure of comforting him with the assurance that he had not one proof of structural disorder, and that by a course of treatment which I indicated to him he could substantially recover. The prediction was verified. Since that time I have several times seen this gentleman, or have heard from him, and know that he is comparatively well and engaged in the practice of his profession. An experienced medical gentleman from a distant city once came to me with a personal history of neurasthenia, by which he had been kept in chronic fear, lest it might be necessary for him to abandon his calling. He declared that he would rather die than become a hopelessly paralyzed invalid; and yet he had not one evidence of organic nerve trouble, although his condition demanded attention and treatment.

A physician from the West—a gentleman of unusual intelligence—came to me with a history which, to his own mind, indicated grave disease of the eyes and heart, and yet all the best ophthalmologists agree that the eye symptoms indicated only functional disorder; a like conclusion was derived from examination of the heart and nervous system.

Not long ago a patient consulted me for brain ex-

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cian is the sufferer, he is apt to let his mind dwell on this anticipation, and to be made wretched by the thought."

There is no question that the majority of the cases of ataxy, reported as cured by galvanization by Remak, Meyer, and other German writers on neurology and electro-therapeutics, were really cases of myelasthenia (spinal exhaustion) or simply spinal congestion.

haustion and spine exhaustion combined, with many of the typical symptoms of both conditions. About the same time she also consulted another physician, who made the diagnosis of rush of blood to the head, and predicted apoplexy. There was no doubt that the patient did have an unbalanced circulation, and at times was afflicted, as such cases often are, with temporary congestions of the brain and spine; but these congestions were not the disease, any more than the black vomit is yellow fever; and there was no likelihood that they would lead to apoplexy, although there was just ground for fear that her condition unrelieved might in time lead to nervous invalidism. As this work is passing through the press, I am consulted by a young man with mild symptoms of spinal exhaustion, who had been assured by his last adviser that he had the premonitory symptoms of paralysis of the lower limbs; he was astonished, incredulous, when I informed him that he was in no more danger of paralysis than of leprosy.[1]

The differential diagnosis of neurasthenia, therefore, so far from being easy, is oftentimes exceedingly difficult; and, in individual cases, it may be absolutely impossible to establish a diagnosis, until the patient has been watched and closely studied for some time. There are stages in the history of nervous symptoms where the tide may turn either way, towards functional or nervous disease; and which way it shall turn is not to be determined by a single glance. In order to be able to make a diagnosis of neurasthenia, it is

[1] Erb remarks on this point: "Abundant experience has shown me that these cases are not rare, and are of great practical consequence. For they cause much anxiety, not only to the patient, but also to the physician, owing to the striking resemblance they possess to the first stage of severe disease of the cord."

needful that we should know thoroughly all the symptoms of organic disease, acute and chronic, and of the different complications which enter into the diagnosis; such, especially, as come from syphilis and malaria. He who knows *only* neurasthenia, does not know even that. The symptoms of ataxy, of muscular atrophy, of general paralysis of the insane, of cerebral and spinal congestion, and all the different forms of professional cramp, such as that of writers, musicians, artists, and the like, must be familiar, both theoretically and practically, to one who is to be prepared at all times to make a diagnosis of the symptoms of neurasthenia.

Distinguished from Organic or Structural Nervous Disease.—The points in the differential diagnosis of neurasthenia from the organic disease which it simulates, and with which it is so often confounded, are as follows:

1. *The symptoms of organic disease are usually fixed and stable, while very many of those of neurasthenia and allied states are fleeting, transient, metastatic, and recurrent.* Very many of the signs of neurasthenia and allied states appear in organic affections, and in both conditions they are precisely the same, so that of themselves alone they would be no guide in the differential diagnosis; spinal tenderness, shooting and stabbing and boring neuralgias, cardiac palpitation, insomnia, or drowsiness, failure of memory, sexual exhaustion and involuntary emissions, mental depression, pain and heaviness in the head and back, disturbances of the nerves of special sense, hyperæsthesia and anæsthesia, local or general, coldness of the extremities, twitchings of muscles—all these and other results of the functional nervous disorders we are considering, manifest themselves in spinal congestion, in ataxy, in

muscular atrophy; but in functional troubles they come and go, and change about and alternate, appear and disappear and reappear without any clear cause, and sometimes utterly vanish even without treatment; in the nervously exhausted these symptoms fly about from one part or organ to another, as from the head to the stomach or back, from the upper to the lower part of the spine; from the front to the back of the head; one day it is the eyes that are troubled; another day the eyes are well and the stomach is complaining, as though it would never cease; but, in a few hours perhaps, the digestion seems to be all right, and the head is in suffering, and so through the whole system. The wonderful precision that ophthalmology has attained enables us to study the neurasthenic symptoms of the eye, negatively at least, in a most interesting way. To those cases of weakness of the eyes with pain on reading or sewing, where all the tests fail to discover any objective cause, and which are not benefited by glasses, I have applied the term neurasthenic asthenopia. My friend Dr. Roosa lately called my attention to the fact that, in testing the visual power of patients, it is sometimes observed that there is a momentary capacity for perfect sight that appears and disappears. These vanishings of functional power are also observed, according to Dr. Roosa, while testing the hearing. After an organic malady once gets established, it reveals itself by a group of symptoms that, however much they may vary in intensity, are mostly *fixed and constant.*

2. *There are certain, though not well known or always recognized symptoms of neurasthenia and allied states which do not often, if at all, appear in structural disorders.*—Among this class of symptoms that are more or less peculiar to functional nervous

disease are these: general or local itching (without objective cause), tenderness of the scalp, teeth, and gums, flushing and fidgetiness, markedly tremulous pulse, without cardiac disease, sick headache, asthenopia, flushing, new and special idiosyncrasies in regard to food and medicine, and which did not exist prior to the illness, ticklishness, morbid desire for stimulants and narcotics, hopelessness, hypochrondria, and morbid fears. If some of these symptoms do appear in real, organic disease, it is yet rare that all, or, indeed, any considerable number of them, would appear together in any one case: some symptoms, as sick headache, for example, are generally inconsistent with grave structural disease of the nerve centres; when the brain or spinal cord becomes seriously injured, our sick headaches are apt to leave us. Likewise, the lack of desire for fluids which is seen in neurasthenia is not, as a rule, so noticeable a symptom in structural maladies.

3. *In organic disease, reflex activity is generally diminished; in functional disease, reflex activity is generally increased.*—This distinction is of great practical service, since not a few of the phenomena referred to in neurasthenia and allied states are either excited by reflex action, or tend to excite by reflex action symptoms in various parts of the body. The human body in health is a bundle of reflex actions; every organ, when disturbed or irritated in any way, may set up a disturbance or irritation in some distant part or organ; but, when the system is in a condition of neurasthenia, this reflex irritability is often exaggerated—indeed, is usually so; and in case of hysteria, the sensitiveness is sometimes so great that the slightest touch on any part of the body, or even the gentlest possible psychical irritation or excitement, may give rise to violent con-

vulsions. To a less degree than in pronounced hysteria, this exaltation of reflex activity is observed in all types and phases of functional nervous disorder.

When any part or point of the body, external or internal, on the periphery, or at the centre, is irritated, some other part is liable to be in some way changed for the better or worse; but there are *par excellence* three great centres of reflex action—the *brain*, the *stomach* and *digestive apparatus* and the *reproductive* system. When any one of these three reflex centres is irritated by over-use or direct abuse, the injury is likely to radiate or reverberate in any or in all directions; we cannot tell just where, any more than we can tell where lightning will strike. In this way, disease may be excited in parts quite distant from the seat of irritation. This accounts, in part, for the immense number and variety of symptoms and abnormal sensations from which the nervously exhausted suffer. Hence it is that it is so difficult to tell from the symptoms, or the locality of the symptoms, just *where* the disease or the source of the disease really is. If a man thinks and worries too much, it is not necessarily the head that will complain; there may be pain in the calf of the leg, or in the eyes, or in the stomach or bowels, or in any part of the back; possibly the arms will ache, or the fingers; or the genital organs will become cold. Very often cold feet and hands are the first signs of mental overwork. Indigestion, however complicated, or by whatsoever causes produced, may affect every part of the body except the stomach, and in ways beyond computation. General aching of the bones, pains in the calf of the leg, creeping chills on the spine, actual pain in the back and back of the head, facial neuralgia, sick headache, roaring in the head, flushing of the face and eyes, pain in the vertex,

cardiac palpitation, diarrhœa: these are some of the results of indigestion in nervous constitutions; and very frequently patients chase up one symptom after another until they get wearied, without either finding relief or suspecting the true seat of the disorder.

Disorders of the genital apparatus in either sex are continually exciting disease in remote organs, and it is observed that in women mild irritation—slight and limited disturbance—produces severer reflex trouble than coarse and grave lesions; superficial disorder of the cervix, for example, often inducing more annoying pains and distresses in the head than incurable cancers; and in men, also, but a little prostatitis or urethral or preputial irritation, not only phimosis, but even elongation with secretion of smegma, are constantly the sole and demonstrable origin of hypochondriasis, dyspepsia, and other nervous symptoms.[1] In

[1] In regard to the relation of neurasthenia to the genital function, and to disease of the male and female reproductive organs, two errors have prevailed: that the genital organs have nothing to do with the causation of neurasthenia and allied affections, and that they are the exclusive causes of such affections.

An eminent neurologist once remarked to me that, in all the cases of spinal irritation and analogous disorders that he saw, the uterus was primarily at fault; on the other hand, an eminent gynæcologist, speaking of the same subject, observed that he saw cases of neurasthenia where there was no proof of any dependence on uterine disease. The gynæcologist was right; for, while many cases of neurasthenia do take their origin in uterine and ovarian maladies, there are also many that have nothing to do with the reproductive system; they are as likely to be the causes as the effects of uterine disturbances. This was substantially the view taken by Dr. Goodell, in his paper on neurasthenia, at the late meeting of the American Gynæcological Society, and it was not, so far as I can learn, disputed by any of the authorities in gynæcology who listened to it. There is, in fact, a manifest disposition among gynæcologists to revive, in a certain measure, the constitutional treatment of some of the cases that come under

the neurasthenic one never can tell from the locality of the pain or other symptom where the disease really is; the diagnosis, to be thoroughly satisfactory, requires, in some cases, an examination, so far as practicable, into the condition of all the principal organs of the body.

Now, while in certain organic affections—as, for example, spasmodic spinal paralysis and amyotrophic lateral sclerosis—reflex activity of a certain kind may be increased, yet, as a law, the reverse appears. The absence of the tendon reflex in the majority of cases of ataxy is an extreme illustration of the tendency of organic disease to diminish reflex irritability.

4. *Neurasthenia and allied troubles are most likely to occur in those in whom the nervous diathesis predominates.*—Among the chief signs of the nervous diathesis are fine, soft skin, fine hair, delicately-cut features, and tapering extremities. Those who exhibit these characteristics are the victims of *functional* as distinguished from organic diseases of the nervous system. With exceptions both ways, this general law will be a good guide in establishing a diagnosis.[1]

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their care, and so far this is right. Without dispute, also, there are some cases of neurasthenia, as of hysteria and insanity, that depend entirely on genital irritation, and would never have existed but for such irritation, and entirely recover with the removal of the irritation; there are others that depend in part on irritation from this source; there are others that arise entirely independently of all irritation of that kind. There is no doubt that irritation, congestion, and imprisonment of the ovaries, and uterine displacements, often excite neurasthenic symptoms. To attempt, however, to explain *all* forms and phases of neurasthenia by reference to the reproductive system in man or woman, is to study neuro-pathology in a partial, fractional, one-sided, fragmentary, imperfect manner.

[1] For more extended remarks on the nervous diathesis, originally suggested in the first edition of Beard and Rockwell's Medical and

As a rule, the structural diseases are found in the comparatively strong—in those who are not especially sensitive, or nervous, or delicate; and when paralysis or other grave symptom appears in one in whom the nervous diathesis strongly predominates, it is far safer to make a diagnosis of functional and temporary disease, and to predict in time entire or approximate relief.

Distinguished from Hypochondriasis or Pathophobia.—The facts in regard to hypochondriasis (or pathophobia) are these: First. A person in perfect health, but with some slight symptoms, may through *ignorance* of what these symptoms mean, be led intellectually to suppose that he has, or is liable to get, some grave disease. In this respect he simply mistakes in reasoning; as he would be liable to mistakes on other subjects in which he is a non-expert.

When a person thus situated is taught by a person whose judgment he respects on those subjects, his fear all ceases. Such persons are not hypochondriacs or pathophobics; for, as soon as they see the groundlessness of their fear, they cease to fear.

Secondly. There are persons who, although fully informed on the real significance of the symptoms from which they suffer, or suppose they suffer, are none the less alarmed in regard to it. Instruction does them no good, but oftentimes makes them worse; they are under the influence of the emotions—they may perhaps know intellectually that there is no reason for their fear; but their emotions control them, and they go on fearing just like those suffering from other forms of morbid fear, as topophobia, agoraphobia, mysophobia, and the like. These are true hypochon-

Surgical Electricity (pp. 285-293) see my work on Hay-fever (pp. 81-86).

driacs or pathophobics. This pathophobia is not a new disease—it is, indeed, a very old one; and I believe that through the increase in culture it is relatively diminishing; just like the forms of hysteria, epilepsy, and chorea, that were so common in the middle ages.

Third. This true pathophobia and hypochondriasis may, and often does, bring on true objective disease of the nervous system, or of other parts of the body. The diseases which they bring on by their worrying are none the less real because of the subjective origin, but are all the more difficult to cure; and require treatment of a medical, as well as of a mental character. This class of hypochondriacs is very often neglected and badly treated.

Fourth. Neurasthenia in its different varieties, and some diseases of the stomach and the digestive and reproductive apparatus, themselves excite hypochondriasis or pathophobia. The patient not only suffers from his real disease, but from the disease caused by reflex irritation, a fear that he has what he has not, or that he will have what he is not in danger of having. The mistake has been to throw all symptoms that are new to science, or not well known, or the existence of which we do not credit, into the common receptacle of hysteria and hypochondriasis, whence the quacks of all the ages have drawn their support and their power.

A morbid fear of disease may be in some instances just as truly a symptom of nervous exhaustion as any one of the large number of symptoms described in the previous chapter; and, like these other symptoms, it is to be removed by treating the cause; very properly, therefore, pathophobia (hypochondria) is included among the other varieties of morbid fear as one of the manifestations of the neurasthenic state.

If this analysis be accepted, it is clear that few terms in medicine have been so misused, both by the laity and the profession, as hypochondria.

General Hopelessness and mental depression are often confounded with hypochondria; but they are not so, except when they take the special form of morbid fear of disease.

The term hypochondria, therefore, is practically and constantly applied to the following very different conditions:

1. Apprehension of disease from ignorance purely.
2. Simple mental depression without any morbid fear of any kind.
3. Other forms of morbid fear, as of places or society, or contamination, or lightning, or storms.

Only fear of disease is entitled to the term hypochondria or pathophobia.

4. *Groundless Fear of Disease.*—This is the only condition to which the term can be strictly applied. And when this condition really exists, it is often, if not usually, one of the many symptoms and results of some actual and demonstrable disease which can be diagnosticated on thorough examination, and relieved by proper treatment.

True hypochondria, instead of being a very common disease as is supposed, is comparatively infrequent—certainly not much more common than the other forms of morbid fear, to which it is allied and with which it is often associated.

Distinguished from Cerebral and Spinal Anæmias and Hyperæmias.—In regard to the relation of neurasthenia to spinal and cerebral anæmia and hyperæmia, it may be said that circulatory disturbances of various kinds and in varied degrees must of necessity arise as results of exhaustion of the nerve-centres; and

it must also be allowed that when the brain or spine is engorged with blood, or greatly deficient in blood, then certain symptoms are likely to follow from such local plethora or anæmia, just as dyspepsia when once excited becomes the centre, directly or reflexly, of numerous morbid phenomena; but the anæmia, the hyperæmia, the spinal or cerebral irritation, like the dyspepsia and insomnia, when broadly and philosophically studied, are branches of a tree, the trunk of which is impoverishment of nerve-force; and, in all these neurasthenic states, over-exertion or mental excitement is liable at any time to bring on engorgements of blood in the spine or brain; there may be rushes of blood to the head or spinal cord, which when they occur become the centres of symptoms of their own; but to call these rushes of blood, these flushings of the face, the disease, is to mistake effects for causes.

The results of treatment demonstrate this in a most interesting way, both positively and negatively; thus you shall cure a spinal irritation[1] without curing or

[1] On this point Erb remarks as follows: "It cannot be denied that this complaint has a close resemblance in many respects to spinal iritation, . . . and the opinion might perhaps be defended that this disease is essentially, for the male sex, that which corresponds with spinal irritation in females."

He does not, however, regard the diseases as identical,and says: "It would be very desirable to lay out a better division and classification of these spinal neuroses, by means of accurate classical and symptomatic study, in order to promote the pathology of such an obscure subject."

"The distinction from spinal irritation will often be less easy to make. . . . It must be admitted that there are cases of ambiguous signification which stand, as it were, half-way between the two forms of disease, and possess somewhat of each."

In science the next best thing to knowing is to know that we do not know. This is Erb's position in respect to the relation of the symptom spinal irritation to neurasthenia. He does not solve

even permanently relieving the patient, for the neurasthenia remains, and is liable to break out any time in the same form, or in any one of a number of forms, such as cerebral irritation, or insomnia, or nervous dyspepsia. The symptom of spinal irritation is indeed one of the easiest symptoms to cure; a few days or weeks at most may be sufficient to drive away all the tenderness, while the condition on which it depends, and of which it is really a part, may require months of treatment, or in some cases may be absolutely incurable. On the other hand, all influences that tend to build up the constitution—a change to country air or travel—will often cure all these symptoms without any special treatment of the symptoms of anæmia and hyperæmia. That there may be such states as cerebral anæmia, cerebral hyperæmia, cerebral congestion, spinal anæmia, spinal hyperæmia, and spinal congestion is undeniable; and these terms are in some cases properly used. Such circulatory disturbances of the nerve-centres, when they exist as the chief, if not only, factor in the morbid process, and the cure of these disturbances is a cure of the patient, may properly be called diseases; but in neurasthenia these circulatory irregularities in the brain and spinal cord are but incidents and results; their removal leaves the sufferer still a sufferer.

The whole set of modern science is indeed now in favor of the view that I presented twelve years ago, that innervation precedes circulation: that the waves

the problem; but he clearly appreciates, as very few writers have done, the need of a solution; and he sees precisely where the confusion lies, and just what position science should attack. The writings of the very latest authors, Rosenthal and De Grasset, are full of confusion on this question, of the nature of spinal irritation and its relation to neurasthenia, of which it is really but one of an army of symptoms.

of blood into the nerve-centres or out of the nerve-centres move in obedience to the nerve-force, as the sea rises and falls under the law of gravity.

Most strikingly, this view is brought out in Vulpian's researches in the physiology of sleep, according to which it seems to be made quite clear that our anæmia theory, and our hyperæmia theory, that, by alternation or in unison, have held the world so long, must give way to the nutrition theory; it is possible that we may be all wrong, as it is certain that we do not yet understand the full mystery of cell nutrition, but just now it is the growing, if not the dominant philosophy in all neurological circles.[1]

Malarial poisoning frequently simulates neurasthenia, and also induces a special type of the disease which may be called *malarial neurasthenia*. Like malaria also, neurasthenia affects and modifies nearly every other disease that the patient contracts, giving a nervous and asthenic character to the symptoms, just as malaria makes other maladies periodic.

Distinguished from Anæmia.—It used to be claimed —and by some it is claimed even now—that neurasthenia is but another term for anæmia, in other words, that impoverishment of blood and impoverishment of nerve-force are identical. The basis of this confusion of ideas is probably the fact that the blood can be seen, felt, measured and analyzed, while nerve-force can only be studied through its manifestations.

The two conditions have oftentimes certain symptoms in common, just as functional and organic nerve

[1] Erb's idea of the nature of the disease is similar: thus, after mentioning the anæmic and hyperæmic theories, and admitting them to be unsatisfactory, he says: "It seems most natural to recur to fine *disturbances of nutrition* in the cord, such as we are still obliged to assume in so many diseases of the nervous system."

diseases have certain symptoms in common; but, in the one case as in the other, there is a radical and inherent distinction—a distinction that modifies not only our abstract conception of the disease, but our prognosis, our hygiene, and our therapeutics. Just as a case of organic nerve disease, treated as functional, is sure to disappoint us, and perhaps injure more than help the sufferer; so a case of neurasthenia, treated and managed as a case of anæmia, is likely to become —as so many of such cases do become—the opprobrium of our art.

The chief points in the differential diagnosis of neurasthenia and anæmia are presented in the following table:

Neurasthenia.	*Anæmia.*
Chiefly found in nervous diathesis.	Appears also in the tuberculous, or rheumatic, or other diathesis.
Impoverishment of nervous system; *no necessary anæmia. Patient may be plethoric.*	Impoverishment of the blood; increase of water, and diminution of red corpuscles.
Found chiefly between the ages of fifteen and sixty.	Found in all periods of life, from extreme infancy to old age.
Not at all necessarily dependent on any important recognizable organic disease.	More frequently, though not necessarily, associated with some organic disease, as tuberculosis, carcinoma, morbus Brightii, etc.
Pulse may be full or normal, but sometimes very rapid or very slow.	Pulse small, weak, and compressible.
No cardiac murmurs.	Murmurs at the base of the heart and over the large arteries, as the carotid, subclavian, etc. "Venous hum" in the neck.
No pallor—sometimes even a rubicund appearance.	Very perceptible pallor of the face, especially of the lips.

Neurasthenia.	*Anæmia.*
Easily fatigued by exertion; *mental* labor in *cerebrasthenia* more exhausting than *physical.* Memory often temporarily weakened, and consecutive thought and sustained mental activity frequently impossible, *even when prolonged muscular labor causes little or no fatigue.*	Easily fatigued by exertion. *Physical* labor always more exhausting than *mental.*
Insomnia a very frequent complication.	Insomnia not so frequent a complication, frequently an abnormal tendency to sleep by day as well as by night.
No necessary or constant disturbance of the circulation.	Disturbance of the circulation, with habitually cold extremities.
Habitual mental depression.	Mental depression not so frequent.
Though common to both sexes, not so relatively frequent in females.	Far more frequent in females.
Is benefited by remedies that directly affect the nervous system, such as electricity, counter-irritation, strychnine, zinc, and oil, while iron alone is of little service.	Is benefited by remedies such as iron, that directly affect the blood.
Usually recovers, but *gradually*, and under the influence of rest, nutritious food, and various sedatives and tonics.	May be *rapidly* removed by the removal of the organic cause.

Distinguished from Hysteria.—From hysteria, neurasthenia is distinguished in part by the absence of the convulsions or paroxysms that are always regarded as peculiar to the hysterical state.

Neurasthenia, like anæmia, may, it is true, lead to hysteria as it may lead to insanity; but hysteria, when it appears, is with all its group of symptoms, including the hysterical convulsions or paroxysms, and the *globus hystericus*, or feeling as of a ball in the throat,

quite a distinct condition. In hysteria there are some of the symptoms, besides the paroxysms, an acuteness, violence, activity, and severity that do not belong to simple neurasthenia.

Hysteria is found usually in those whose emotional natures greatly predominate. Hence, relatively to neurasthenia, it is far more common in females than in males. Indeed, hysteria was once supposed to be exclusively a disease of women; hence its name. Neurasthenia, on the other hand, although more frequent in women, is yet found in great abundance in both sexes, and in both men and women of intellect, education, and well-balanced mental organizations.

Hysteria of the mental or psychical form may occur in those who are in perfect physical health, without any of the symptoms of neurasthenia or of anæmia; those of the strongest possible constitutions are the victims of this type of hysteria, the subjective psychological cause of which is an excess of emotion over intellect, acted upon by any influence that tends to produce emotional excitation. This form of hysteria is found in the stout Irish servant girls, among the Southern negroes, and among the undisciplined and weak-minded of all races and classes and ages, and, unlike neurasthenia, was more prevalent in the middle ages than in the nineteenth century.

Lastly, hysteria, whether of the mental or physical type, or of both types combined, may, and often does, completely recover suddenly, and may disappear under purely subjective or mental treatment. Neurasthenia never recovers suddenly, but usually requires much time, whatever treatment may be employed; and though, like all other morbid states, it can be powerfully influenced by mental therapeutics, yet demands usually positive and varied objective treatment.

The differences between neurasthenia and hysteria appear more distinctive when tabulated side by side, as follows:

Neurasthenia.	*Hysteria.*
No convulsions or paroxysms.	Hysterical convulsions or paroxysms.
No *globus hystericus*, no anæsthesia of the epiglottis, ovarian tenderness less common, and attacks of anæsthesia far less frequent and *less permanent.*	*Globus Hystericus*, anæsthesia of the epiglottis, ovarian tenderness, and attacks of general or local anæsthesia.
Symptoms more moderate, quiet, subdued, passive.	Symptoms acute, intense, violent, positive.
May occur in well-balanced, intellectual organizations.	Usually associated with great emotional activity and unbalanced mental organization.
Very common in males, though more common in females.	Very rare in males.
Is always associated with physical debility.	In the *mental* or psychical form occurs in those who are in perfect physical health.
Never recovers suddenly, but always gradually, and under the combined influences of hygiene and objective treatment.	May recover suddenly and under purely emotional treatment.

[*Distinguished from Lithæmia.*—The relationship of neurasthenia to lithæmia has long seemed to me to be of the utmost importance, and to have been unaccountably neglected in the consideration of both conditions.

A patient consults his physician complaining of neurasthenia, for which he has been treated for a long time without benefit. Now neurasthenia is a disease by no means incurable, and the fact that no benefit had been derived leads him to doubt the diagnosis. True enough, a more careful examination reveals evidences

of intestinal and liver indigestion, and an abundance of uric acid in the urine. For years the patient has perhaps taken but little exercise, and indulged his appetite without restraint. Under a complete reversal of this order of affairs—more exercise in the open air, simpler diet, simple remedies directed towards correcting the disordered digestive function—many of his most persistent and annoying symptoms quite disappear. Every general practitioner could, I doubt not, duplicate many times such cases as this; and yet, on the conrary, how often has the neurologist been called upon to deal with just the reversal of this state of things, where a typical neurasthenic has been regarded as simply hypochondriacal, and treated with alteratives and purges for a supposed torpidity of the liver.

The fact that both neurasthenia and lithæmia are so frequent, that there is such an apparent similarity of symptoms, and above all that they demand methods of treatment so radically diverse, impels me to relate two cases, each of them typical of the class to which it belongs, and both of them illustrating most effectively the necessity of a correct diagnosis as a guide to proper methods of treatment.

Case of Neurasthenia.—Mr. O., aged thirty-six, consulted me for symptoms that had for the past five or six years greatly interfered with his happiness and capacity for work. Physically he was well developed, standing five feet ten inches in his stockings, and weighing 170 pounds. His complexion was fair, his eyes were blue, his hair was blonde, and his nutrition was apparently unimpaired.

Intellectually he was far above the average. He could speak correctly in two languages other than his own, besides understanding and writing a third, and all this he had mostly acquired through self-instruction.

In addition to the labor necessitated by these scholastic acquirements, he had devoted himself for years, with few intervals of rest, to the details of an exacting mercantile business. The symptoms to be described were essentially the same as those he had suffered from for the past five years.

He complained first, and perhaps most of all, of a settled melancholia, associated with a morbid and utterly baseless fear of financial ruin, and yet he was by no means ill-tempered or irritable. On the contrary, he was in his most depressed moods a model of dignity and gentle demeanor. His pulse was 80 or more and somewhat irregular, rendering him fearful of heart disease; but this was only one of a number of morbid fears that had from time to time distressed him. His appetite was fair at all times, and his weight varied but little from year to year. Constipation was a somewhat troublesome symptom.

He looked strong, and yet he was as easily exhausted physically as mentally. He possessed no reserve force, and gave out utterly whenever he attempted to overstep the bounds of the most ordinary effort. At one time his eyes would be bloodshot, and at another perfectly natural, showing a tendency to local and transient hyperæmia, due principally to innervation.

Misled, perhaps, by the constipation from which he suffered, the medication to which he had been subjected had been directed in good measure toward correcting the function of food assimilation, but with no marked effect. To this time he had not given up the general supervision of his business, but soon after coming under my observation he was induced to leave New York indefinitely. He journeyed to the West, visited the Yellowstone region, and at San Francisco took steamer for China. He was absent some eighteen

months, and returned a well man, nor has he since relapsed into his former condition.

This case I regard as one of neurasthenia pure and simple. The patient needed no remedy directed to the liver, to the bowels, or to any special function. If he had been unable to pursue the course he did, remedies directed to the restoration of the impoverished nerve-force would have been in order, and not cholagogue cathartics or bitter tonics. What he needed above all things was absolute rest for the exhausted nerve-forces, and an entire change of air and scene. All cases of neurasthenia are by no means so wonderfully benefited by rest and change of scene. I have repeatedly had neurasthenic patients who had traveled extensively and failed to be greatly benefited until the impoverished nerve force had been improved by suitable forms of treatment. Subsequently, travel may be resorted to with profit and pleasure. The exhaustion that results from any excessive strain upon the mental and physical powers is simply an attack of acute neurasthenia, and differs from chronic neurasthenia very much as any acute attack differs from its chronic form. It is a question only of permanence and degree, but the basis of both is impoverishment of nervous force, and waste of nerve-tissue in excess of repair.

As illustrative, on the other hand, of the lithæmic condition, I offer the following case:

Mr. N., aged forty-three, a stout gentleman with a somewhat sallow complexion, consulted me for a variety of symptoms which he supposed to be neurasthenic, and for the relief of which he had taken many "nerve-tonics," together with a "course of electricity," but with no appreciable benefit. He suffered from periodical attacks of constipation, and at these times he became so depressed and irritable as to render

his family exceedingly uncomfortable. He himself suffered most of all from this lack of mental control, and deplored it beyond measure. For his constipation he had been accustomed to take much fruit and to rely on the saline waters, but gave little heed to his diet, eating heartily of whatever he liked, and invariably taking wine with his dinner. He slept well, and when by the use of these waters or after an attack of diarrhœa the clogged system became in a measure unloaded, he felt as well and as active as ever. Several examinations of his urine revealed the fact that when he was constipated and depressed uric acid was present in abundance, but when his bowels moved freely and he was feeling fairly well hardly a trace could be found. Noises in the ear were a most annoying symptom, ceasing when the urine cleared, and invariably coming on in full force with the appearance of uric acid.

When it was explained to this patient that he was not in any way neurasthenic, but that the cause and cure of his distressing symptoms depended largely if not altogether upon his food and drink and his habits of exercise, the statement seemed a revelation to him. He readily consented to a great decrease in the albuminoid forms of food, total abstinence from alcoholic stimulants, and out-of-door exercise by walking for at least five miles each day.

No medication was attempted through the whole course of this régime, unless the occasional dose of a third of a tumbler of Rubinat water could be thus designated.

Under this dietetic change and increased bodily exercise the improvement in the condition of this patient was radical and rapid. The action of his bowels became regular and free. and in saying this all is said as

regards his other symptoms. The condition of his bowels was the index of his mental and physical condition. When he was constipated, uric acid, the product of imperfect oxygenation, invariably appeared in the urine, associated with cold hands and feet, noises in the ears, heaviness or rather a sense of constriction about the head, and excessive irritability of temper. With the relief of the constipation all these symptoms disappeared, and so long as he faithfully follows the prescribed method of living his functions are properly performed.

Functional diseases of the nervous system, and indeed all forms of functional derangement, are perhaps practically more important for our consideration than those that are organic or structural in character. Long experience has taught us how very little all our boasted therapeutics amounts to in dealing with any progressive degeneration of nerve-tissue.

John Quincy Adams, referring to himself a short time before his death, said that the house was tumbling to pieces and the landlord refused to make further repairs. In the degenerative changes brought on by disease, by injuries, or excesses, very much the same rule prevails, and when nature withholds her aid our art is practically powerless. With what in our ignorance we term functional diseases the case is widely different; nature stands ever ready to aid in the cure if only the opportunity be given. Neurasthenia is a functional disease, and ought never to be mistaken for organic disease of the nervous system, and seldom is, except by the patient himself, and therefore no mistakes of treatment need follow in this connection; it is, however, frequently mistaken for lithæmia and other faults of assimilation, which lead to radical errors of treatment. It might be suggested that the presence

of uric acid in the urine ought to be a sufficient diagnostic sign, but uric acid is found in neurasthenic patients and is not at all times found in the lithæmic.

Other objective as well as subjective symptoms therefore enter as no unimportant factors in aiding toward a correct diagnosis.

According to my own experience, one of the most common and distinctive points of differential diagnosis between lithæmia and neurasthenia is the difference in the character of the mental phenomena. Both the lithæmic and the neurasthenic suffer from mental depression and a profound sense of misery, more marked indeed in the former than in the latter condition. While, however, the neurasthenic may suffer from the deepest melancholy, and imagine himself heir to a thousand ills, he becomes the victim, as a rule, of no such irritability and unreasonable outbursts of temper as the man whose brain is actually poisoned by the imperfectly transformed products of digestion. The neurasthenic may be at times extremely irritable, but this irritability is more passive than active, and any ebullition of angry feeling is quite evanescent. His demeanor is, as a rule, quiet, and there is but little manifest tendency to make those dependent upon him miserable by his words and actions. The touchy mood of the lithæmic, on the contrary, may last for days or weeks. It is due to actual toxæmia, is often if not generally accompanied by obstinate constipation, and may be relieved completely by the action of a cholagogue cathartic.

In neurasthenia, again, cold hands and feet are not by any means the rule, but in intestinal and liver derangements the nitrogenized wastes circulating in the blood cause, by their irritation, tonic spasm of the arterioles, resulting in the cold hands and feet so bit-

terly complained of by the sufferers from lithæmia. The condition of the tongue is an important diagnostic aid. In lithæmia it is coated far more frequently and to a greater extent than in neurasthenia, but in some cases of lithæmia the tongue is but slightly affected. It may appear at first sight perfectly normal, and it is only when looked at carefully from the side that an unnatural brownish color is observed. It is in such cases as this that mistakes in diagnosis are frequently made. As regards the pulse, it may be said that in lithæmia it is slow rather than fast, and in neurasthenia fast rather than slow. In neurasthenia the oxalates are frequently found in abundance, while in lithæmia the oxalates are not usual.

No one example of neurasthenia illustrates more than a very small fraction of the great army of symptoms that have been observed in connection with this disease, and it is for this reason that so many have expressed doubts as to the propriety of any such formulation as neurasthenia.

On the other hand, making allowances for constitutional differences and occasional aggravated forms, cases of lithæmia are very much alike, and when one has seen a few such cases he has seen them all.

If it were practicable to take a hundred cases of neurasthenia and write the sum-total of symptoms, objective and subjective, and do likewise with the same number of lithæmic cases, the result would be an interesting study—indicating that, in the fullness of their manifestation, the two conditions are symptomatically very wide apart, however similar they may appear when compared singly.

The treatment of neurasthenia and lithæmia is as widely different as their nature and causation. In the management of individual examples of both these

conditions the minor treatment is often necessarily varied to meet special annoying symptoms.

In lithæmia, for example, constipation may be met by the moderate use of mineral waters, especially of the Carlsbad and Rubinat varieties, because of the large amount of sulphate of sodium they contain, and occasionally more active cholagogue cathartics can be used with advantage. The natural lithic waters are also of value and always in order. As for neurasthenia, the remedies suggested for its relief are as numerous as the symptoms which it presents, and their enumeration alone would fill a page.

If we once fully appreciate the fact that the two diseases demand diametrically opposite methods of treatment, that the relief of lithæmia in great measure depends upon, as it is caused by, the food we eat and what we drink, as well as habits of exercise, and that neurasthenia is caused by worry and work and nervous strain, our knowledge of the effects of food in the organism, together with the exercise of ordinary sense and judgment, will enable us to deal intelligently with both these conditions.]

Distinguished from Syphilis.—Syphilis sometimes simulates neurasthenia; the irregularity of many of its phenomena, such as sudden loss of power of one limb or of several limbs—coming and going—tingling and numbness in the extremities, cramp and twitchings of the muscles, especially at night, disturbances of the special senses, transient and curable impotence—all suggest neurasthenia, and of themselves alone are not sufficient to enable us to make out a diagnosis of syphilis. The syphilitic origin of such symptoms is established by these four considerations:

1. The history of the case.
2. Other symptoms of syphilis.

3. The temperament of the patient. Other factors being equal, the nervous diathesis would give a probability of neurasthenia, although nervous syphilis does appear in the nervous and sensitive.

4. The results of anti-syphilitic treatment. This is the conventional mode of making a diagnosis in suspected syphilis; but in the question under consideration it is not necessary to resort to it.

Syphilis may simulate, not only neurasthenia, but even absolute hysteria. I have known a syphilitic patient to go rapidly through a series of hysterical phenomena—transient paralysis, flying all about the body; one hour aphasia, another paralysis of the arm or leg, or aphonia, and so forth. Dr. Althaus, of London, reports similar experiences.

Distinguished from Common Cold and Rheumatism.—Neurasthenia sometimes simulates in a perfect and most interesting way the symptoms of a common cold—the chilliness, the positive coldness, the tremor, the heaviness and soreness of the back, bones, and limbs, and, in some cases, excessive secretion from the eyes and nostrils, all may exist together in a neurasthenic sufferer, and in some cases only time can determine whether a cold has been taken or not.

Neurasthenia also may simulate rheumatism, and is frequently mistaken for it. Thus the stiffness of the neck, when the upper portion of the spine is in an irritable condition, or of the loins and lumbar region when the lower part of the cord is irritated, at once suggests rheumatism.

Differential Diagnosis of Cerebrasthenia (Brain Exhaustion) and Myelasthenia (Spinal Exhaustion).—Both for the hygiene and the therapeutics of neurasthenia, it is necessary to be able to make a proper differential diagnosis between *cerebrasthenia* (exhaustion

of the brain) and *myelasthenia* (exhaustion of the cord). In my original paper (in 1869) no such distinction was attempted. The symptoms that suggest *cerebrasthenia* are obviously those that are directly or indirectly connected with the head, and they may be either physical or psychical. Tenderness of the scalp, a feeling of fullness in the ears and head, all disorders of the special senses, tenderness of gums, deficient thirst, morbid desire for stimulants and narcotics, gaping, yawning, rushes of blood to the head, congestion of conjunctiva, the different forms of morbid fear, mental depression and impairment of memory and intellectual control, all indicate that the brain is chiefly affected. Certain symptoms, however, as external tenderness of the scalp, general or local itching, clamminess of the extremities, muscæ volitantes, pain and heaviness in the back of the head, may arise from exhaustion of the upper part of the spine. The symptoms that suggest *myelasthenia* or spinal exhaustion are local spasms of muscles, local chills and flashes of heat, shooting pains in the limbs, startings on falling to sleep, morbid sensations at the bottoms of the feet, as of burning or tenderness, vague pains in the feet, podalgia, sexual debility in its various phases, pain in the back—any part of it from the nape of the neck to the tip of coccyx with or without the accompaniment of spinal irritation—creeping and crawling sensations up and down the spine, incontinence of urine or paresis of the bladder, feeling of pressure in the chest with or without ticklishness in that region, heaviness and stiffness of the muscles simulating rheumatism, sensitiveness to cold and changes in the weather, dryness of skin or morbid perspiration, dryness of the joints, and dilated pupils.

Some other symptoms, as nervous dyspepsia, con-

stipation, flatulence, numbness and hyperæsthesia, and insomnia, appear to be common to both states, since they manifest themselves when either cerebrasthenia or myelasthenia is uppermost.

No other single fact so much aids us in making out the differential diagnosis as this, that in myelasthenia physical exercise, especially walking and standing, but oftentimes any form of muscular exertion requiring either the upper or the lower limbs, is fatiguing and disagreeable, and when kept up, is liable to make the patient worse and interfere with the treatment. In cerebrasthenia, on the other hand, severe, and violent, and long-kept-up muscular exertion can be well borne, and is frequently desired and sought for; indeed, with such patients this desire for physical effort and activity sometimes becomes a morbid symptom, and demands restraint. Those whose brains are diseased even to the border land of insanity, can, in some instances, do far more physically, with far less fatigue, than when in their usual health.

Whence I derive this practical rule for the differential treatment of cerebral and spinal exhaustion—namely, that in *cerebral exhaustion* (*cerebrasthenia*) *active muscular exercise in reasonable amount and variety may be allowed and enjoined;* in spinal exhaustion (*myelasthenia*), *relative and in some cases absolute rest is demanded or only passive exercise, for a shorter or longer time, as may be, according to the special peculiarities of the individual.*

A neglect of this cardinal distinction, a want of knowledge of the differential symptoms of nervous exhaustion chiefly centred in the brain, and nervous exhaustion chiefly centred in the spine, is the constant source of errors in the advice given to patients, and in the regimen that patients prescribe for themselves.

Cerebrasthenia and myelasthenia are very often combined, and not unfrequently alternate with each other. These facts yet further complicate both the diagnosis and treatment; at one stage of neurasthenia, a patient may be able to take large amounts of muscular exercise; at another stage—separated, it may be, by not more than a few days or weeks—all muscular activity is irksome and injurious, and, if persisted in, may do harm. Hence it follows that patients must be watched and studied by the physician so that the hygiene may, to a certain extent, be varied with the different phases of the disease.

To indiscriminatingly advise such patients to work furiously in the open air, as is so often done, or to advise them to go to bed and keep in bed, as is also done—to the extent of confining them in a dark room—is likewise unscientific, and may do mischief; indeed, as practised years ago, the dark-room treatment certainly did not a little evil; it was an empirical employment of a really good therapeutic measure. There are cases of neurasthenia where confinement to bed is the very best possible treatment; there are cases when it is the very worst possible treatment.

Pathology and Rationale.—In regard to the pathology of neurasthenia, my view, as expressed in my first paper on the subject, is, that there is an impoverishment of the nerve-force, resulting from bad nutrition of the nerve-tissue on the metamorphosis of which the evolution of nerve-force depends; as in anæmia, there may be a deficiency in quantity or impairment of quality of the blood; so in neurasthenia there is, without question, deficiency in quantity or impairment in quality of the nerve-tissues; hence the exhaustion, the positive pain, the unsteadiness, the fluctuating character of the morbid sensations and phenomena to which the term neurasthenia is applied.

In neurasthenia, the balance between waste and repair is not justly maintained in the central nervous system, however it may be in other parts of the body.

The patient may be fleshy, may weigh more than when in health; but it is not unreasonable to believe that the expenditure of nerve-matter is sometimes greater than the supply, and that, consequently, there is a constant poverty of nerve-force.

It is certain that there is an instability of the nervous system, as the symptoms show, and notably in extreme cases that have gone on to neurasthenia and hystero-epilepsy.

In these cases, everything is changing—there is constant oscillation—the essential factor in these cases indeed being perpetual mutation from bad to worse, or vice versa, from day to day, and in some cases from hour to hour.

Vaso-Motor Reflexes.—One of the most interesting and suggestive of all the facts connected with neurasthenia is the part which the vaso-motor system plays in reflex action. The blood-vessels are supplied with vaso-motor nerves, which are connected with the spinal cord. The heart also is supplied with vaso-motor nerves, and has besides an exceedingly complex and varied nerve-supply—the accelerator nerves, the vagus, and the depressor.

When we consider these facts, we find an explanation of the clinical fact that in cases of neurasthenia the heart is so frequently affected. The so-called irritable heart, corresponding to irritable breast, irritable spine, irritable ovary, is indeed one of the most common of all the symptoms of neurasthenia. There are very few cases of long-standing neurasthenia who do not, at some stage or other of this disease, suffer from

cardiac palpitation or oppression, or from a morbidly slow or rapid pulse. These symptoms, in truth, are more frequent than perhaps almost any other, and drive certain patients of this class to the physician for consultation; they fear that they have organic, incurable heart-disease, and it is one of the most difficult tasks of the medical adviser who fully understands these cases, and sees the true meaning of these cardiac symptoms, to convince such patients that their trouble is functional purely, and that, so far from being likely to die in a moment, they will probably live all the longer for their heart annoyances.

The heart goes up or down through reflex irritation, from any one or all of the great centres of irritation—from the brain through emotion of any kind, from the stomach through indigestion, or so-called biliousness, from any part of the genito-urinary tract, but especially from the prostatic urethra.

Now what is true of the heart is also true of the whole vascular system, though less demonstrably and perceptibly. Through the combined action of the cerebro-spinal and vaso-motor system of nerves in all their complexities and involvements, the large and minute blood-vessels everywhere are constantly liable to change in their calibre through reflex irritation from any part of the body. This is the philosophy of the passive congestions of which I have previously spoken, which may take place in the brain, in the spine, in the stomach, in the genito-urinary system, or very likely in the heart itself. The tone of the vessels is diminished through faulty innervation; hence the explanation of the statement previously made, that in pathology, innervation precedes circulation—the nerves control the arteries. Anæmias and hyperæmias, congestions and the opposite states, are the re-

sultants of the state of the nerves of the cerebro-spinal and the vaso-motor systems.

Not only such phenomena of neurasthenia as blushing, pallor, and excessive sweating, local or general, are thus explained, but also very many other of the prominent symptoms of this state.

That there are sweat centres in the nervous system is now pretty well demonstrated; and it is not improbable that there is a secreto-motor system, or, if not, what is practically the same, a special mode of action of the nerves that distinctly preside over the secretions. Admitting the existence of such a special division or mode of action of the nervous system, the symptoms of excessive, local or general sweating (palmar hyperidrosis, etc.), sudden attacks of diarrhœa, of excessive flow of urine, of salivation, of weeping, are satisfactorily and in a most interesting way explained.

If a neurasthenic patient raises his hand and holds it up for a time, the veins will soon empty; if he drops that hand, in a moment the veins become turgid and full, as in an old person. This change takes place more quickly, the alteration is more sudden and violent than in a person in full health, and is explained by want of tone in the nerves of the vessels and of the heart. If we could look into the brain and the spinal cord, and the stomach and prostate gland, we should find, no doubt, the same condition there as is seen in the hands or in the conjunctiva.

To call, however, this local and transient and changing hyperæmia the disease, is to substitute effects for causes; the changes of circulation are results of defective innervation—passive hyperæmia is the product of neurasthenia. A want of recognition of this supreme fact is the basis of an enormous amount of literature of cerebral anæmia and hyperæmia, with

which our works on nerve-diseases abound, and which would never have been written if this fact had been clearly recognized.

So far as the circulation is to be taken into account, it is probable, judging from all the sources of evidence, deductive and inductive, that passive congestion, enlargement of the veins, is more frequent in neurasthenia than any other condition of the blood-vessels. While there are fluctuations, very likely, between anæmia and hyperæmia, yet, stasis of blood is probably the condition which we shall most likely find, when the symptoms are at their worst, if not at other times. All our knowledge of disease points to this general conclusion; and examinations of the eye while in a state of hyperæsthesia, that have been made by experts with the ophthalmoscope, show pretty clearly that such is the pathological state. It is quite true that there may be considerable passive hyperæmia, local or general, without any local or general disturbance; but this fact is not inconsistent with the view that passive congestion in a neurasthenic part or organ, would be more likely to be accompanied with pain and irritation than the same amount of congestion in a healthy person.

The probabilities, therefore, are almost, if not quite, convincing that, if we could examine the spinal cord with its membranes during an attack of spinal irritation; or the ovaries during an attack of ovarian irritation; or of the prostatic urethra in disorder of that part, we should find in many cases, if not in all, or in a majority, passive congestion; and it is very probable that, if we could study these parts at all times and in all stages of the disease, we should find that the circulation would vary very greatly. But if we should farther infer that this slight circulatory disturbance

was all there was to the pathology, we should make the greatest possible mistake in reasoning.

The simple condition of hyperæmia is not necessarily pathological, nor does it in a healthy person cause any unpleasant symptoms; but when a person is in a neurasthenic state, a very slight disturbance in the circulation, a trifling afflux of blood, a passive venous congestion that can only be seen under close inspection, may cause distressing symptoms. The ophthalmoscope shows this to be the case in the eye, and it is probably just as true of the rest of the body. Dr. Roosa, in examining one of my neurasthenic patients who had asthenopia, remarked to me that he saw nothing of any account in the patient's symptoms, which had been serious and long standing, except a slight hyperæmia of the retina; and that he had seen still greater hyperæmia without any abnormal symptoms whatever. In this lies the whole philosophy of this subject: the real pathology of neurasthenia is not in the circulation, but in the innervation; and it is just as real as though it were seen with the eye.

Dr. Salisbury, of Cleveland, claims to be able to diagnosticate a seriously exhausted condition of the nervous system by the changed appearance of the blood corpuscles; his theory being that the red corpuscles are carriers of substances that feed the nerves; and he asserts, that when these corpuscles are not properly laden with this food for the nerves, as in the case of nerve exhaustion and insanity, the corpuscles exhibit changes that the microscope can recognize; hence an addition to our means of diagnosticating nerve impoverishment. Dr. Heintzman, of New York, claims to be able to determine, by examination of the blood under the microscope, whether the constitution is good or bad, and even to tell whether the subject is

specially exhausted at the time of the examination—as, for example, after a sleepless night.

Both of these claims are yet on their trial before the profession, and cannot be regarded as parts of science, until they have been indorsed by a considerable number of experts of admitted authority, and also made verifiable by others who shall make themselves experts; for this is the gauntlet that all claims must pass before they are permanently received into the fold of science.

If either or both of these claims, or some similar claim, shall stand the cruel test of time and expert skill, we shall have a positive, so far as it may go, satisfactory addition to our means of studying functional disorders of the nervous system, and a very interesting ocular and physical proof of the general position that I have here taken.

If it be objected, as indeed it often has been—and by those for whose judgment I have the highest respect—that while the general philosophy and analysis of these nerve symptoms are found and verifiable, yet that the term neurasthenia is faulty in that it indicates only a state or manifestation, instead of a limited pathological lesion, I can only reply, as I have done from the first, that nearly all our medical terminology expresses our ignorance more than our knowledge; that our best known diseases, as epilepsy, insanity, chorea, hysteria, hay fever, writer's cramp, musician's cramp, telegrapher's cramp, and nearly all our paralysis and neuralgias, receive their names from single and striking symptoms or suspected factors in their causation, which terms we must yet retain, despite all our actual or prospective progress in neuropathology; and there is no objection to the use of these terms, provided we understand their meaning; indeed, their re-

tention is a matter of necessity, till such time as the minute pathology of these phenomena shall be unveiled. Then they can be and will be gradually abandoned.

Functional as distinguished from Organic Disease.—Throughout this work I have used the words "functional" and "structural," in their ordinary senses, without any desire to play upon them, or twist them to accord with any theory. These old terms are justifiable. Practically, we apply the term structural, or organic, to those diseases where the pathology, whatever it may be, can be brought under the direct observation of the aided or unaided senses.

Functional diseases, on the other hand, are those where the pathology, whatever it may be, cannot be brought under the observation of even the best aided senses. What the microscope can see, we call structural—what the microscope cannot see, we call functional.

In functional nervous disease, the pathology is *negative*—a deficiency in quantity or quality of the normal constituents of the nerve substance. In organic or structural nervous disease the pathology is positive—an addition of abnormal substances to the veins. We can more easily supply what is wanting in the nutrition of the veins than remove what is organized in the vein as a foreign substance.

In the chances of relief and cure all the advantages are, therefore, of necessity on the side of functional disease. It is because neurasthenia is a functional disease that it is, under right management, so relievable.

Recapitulation.—The leading points of the pathology and rationale of neurasthenia may be thus epitomized:

1. Neurasthenia is a chronic, functional disease of the nervous system, the basis of which is impoverish-

ment of nervous force, waste of nerve-tissue in excess of repair; hence the lack of inhibitory or controlling power—physical and mental—the feebleness and instability of nerve action, and the excessive sensitiveness and irritability, local and general, direct and reflex. The fatigue and pain that temporarily follow excessive toil, or worry, or deprivation of food or rest are symptoms of acute neurasthenia, from which the chronic form differs only in permanence and degree. Nervousness is really nervelessness.

2. The varying and multitudinous symptoms that accompany neurasthenia are largely the result of reflex irritations that take place, not only through the ordinary motor and sensory nerves, but through the sympathetic system and vaso-motor nerves. These reflex irritations may arise from any part of the body, and may be transmitted to any other part; but the chief centres of such irritation are the brain, the digestive system, and the reproductive system.

3. The heart and blood-vessels, through their abundant, complex, and sensitive nerve-supply, are quick to feel any such reflex irritation from any source. Thus the local and general blood-supply of the body is liable to fluctuation, with a special tendency to local passive hyperæmia or venous congestion. In the eye, this condition can be inductively demonstrated. The circulation is thus kept constantly unbalanced, waves of hyperæmia pass from one organ to another, under the influence of a myriad exciting causes. Thus is explained the inconstancy and correlation of the symptoms, the caprice with which they come and go, and the substitution of one symptom for another.

4. Innervation precedes circulation. These local and varied hyperæmias, with the special and local symptoms to which they give rise, are not strictly diseases,

but the results of disease. These hyperæmias are the products of neurasthenia.

5. The so-called cerebral irritation, spinal irritation, irritable eye [neurasthenic asthenopia], irritable ear, irritable stomach [nervous dyspepsia], irritable heart, irritable uterus, irritable ovary, and irritable prostate, are but special local manifestations of the general neurasthenic state. These special conditions cannot be scientifically studied or treated individually or separately; but only in relation to each other, and to the trunk of which they are the branches.

6. Neurasthenia may exist entirely independent of anæmia. Its subjects are often exceptionally physically strong, and with all their nervous weakness and pains, capable of severe muscular toil and endurance. It may, however, be complicated with anæmia, and also with various organic diseases, of which it is sometimes the result, though but rarely the cause. As the blood is the body in a fluid state, conveying the materials of the nervous system as well as of other tissues, it is probable that it changes in its constitution with the various states of neurasthenia; and it is not improbable that such changes, in the corpuscles at least, may be in some way brought within the range of the senses.

Such, in substance, was the philosophy of neurasthenia that I taught in my first paper on the subject, as published in 1869, and subsequently re-published as a chapter in Beard and Rockwell's "Surgical Electricity." This philosophy has been in the main adopted and advocated, and the observations and reasonings that led to it confirmed by all who, since that time, have conspicuously written upon neurasthenia. It would seem, therefore to have passed the ordeal of a sufficient number of experts in its department to be admitted among the accepted facts of science.

CHAPTER IV.

PROGNOSIS AND SEQUENCES.

A QUESTION which to the sufferers of neurasthenia and to physicians is most important of all—What can be done to relieve or cure these cases? What are their hopes for the future?

In answer it may be said that the majority can be relieved, or substantially cured. The number of those of whom this cannot be proved must be very limited indeed. This relief or cure cannot be obtained in a moment, or by a mere prescription or suggestion; but it is the reward only of a proper and faithful carrying out of the modes of treatment and hygiene that have borne the test of time and experience.

The first thing required, however, is to know what the disease is; to understand it, and to know what it is not; and then, as a proper sequence, to obtain a just and reasonable idea of the principles and methods by which it is to be treated.

This knowledge is, indeed, one-half of the campaign, and for want of it, there are thousands who pass through years of suffering, apprehension, and despair; all the while anticipating or fearing, and, in some instances, almost hoping that some incurable organic disease will seize hold of them and bear them away.

Recent Progress made in the Treatment of Neurasthenia and allied Affections.—There is probably no department of therapeutics in which greater progress

has been made than in the treatment of neurasthenia and affections allied to it, during the last fifteen years. Indeed, an absolute revolution has been wrought, both in the hygiene and medical management of disorders of this class; new remedies, new modes of using old remedies, new combinations of remedies, new doctrines of hygiene, all have been introduced in this limited time, and all together have made an era in the therapeutics of these neuroses. The introduction of local, general, and central electrization alone has added a new continent to therapeutics; while the bromides in all their varieties and combinations, which were little or not at all known fifteen years ago, are now used by the ton in civilized countries, and have put it within our power to relieve and cure, where formerly we should have been helpless.

Relief and Recovery of Special Symptoms.—Very interesting, indeed, it is to note the rapidity with which certain, even very long-standing symptoms of neurasthenia are relieved at the beginning of a course of treatment. Sleeplessness, for example, one of the most common of all the symptoms, and one of the most distressing to patients, is sometimes relieved in a few days after treatment is begun, and that, too, without the use of any powerful anodynes or narcotics. Likewise, the terrible symptom, mental depression, which drives some of these cases almost to suicide, is in some instances removed instantly by a full consultation, wherein they receive clear and just information as to the real nature of the malady and the probabilities of a cure, and enter with courage and will on a line of treatment. Some who have nursed and worried for years over their physical sorrows, are quickly helped by a free unburdening of themselves and the obtaining of a diagnosis in which they have confidence.

The special symptom of morbid fear, in its numberless phases, sometimes recovers of itself, and sometimes is the very last of all the symptoms to recover under medicine and hygiene. The special symptom of sick headache, or the tendency to sick headache, can usually be either broken up or greatly relieved in a few weeks of treatment; likewise with the symptom of spinal irritation and cerebral irritation. The test and measure of improvement is not so much the relief of any one symptom, taken by itself alone, as by the average of all the symptoms. In some instances, certain abnormal sensations may grow worse at first, while others grow better, and on the average there is decided improvement.

In some cases every symptom quickly disappears, except perhaps one which remains for a long time as a perplexity and annoyance, although not interfering with the daily routine of active life.

Prognosis depending on the hereditary character of the disease.—Neurasthenia, like everything else that belongs to the constitution, is hereditary, passing down from parents to children, diffusing itself in various ways through the different branches and ramifications of families. The more decided and positive the hereditariness of any case, the greater the difficulty in absolutely accomplishing a cure, and the greater the likelihood of a partial relapse after relief has been obtained. Hereditary neurasthenia is not, however, discouraging; it yields, and sometimes yields quickly, to treatment; but the yielding is not of so stable a character as in neurasthenia which is accidental or that appears for the first time in individual patients. In very many cases, neurasthenia itself is not hereditary, but the nervous diathesis, of which neurasthenia is an evolution, has been derived from the parents on one or both

sides; but in this malady, as in consumption, the hereditary tendency can be, and is, successfully combated, although the contest is harder and longer than for those whose inheritance is perfect.

Working Order.—It is a high desideratum to put these patients into working order. My expectation and ambition is, when cases of this class come under treatment, to so manage them that they shall be able to attend to those duties in which they are happy and useful. Persons who have retired from active employment, or who have been kept from engaging in active and responsible toil on account of their neurasthenia, are encouraged and aided to look forward to the time when they shall again renew their labors. This expectation is itself a curative force; and to put these cases into working order is to accomplish a great work, which they well appreciate, and it is, indeed, practically to cure them, even though many unpleasant symptoms at times distress them.

One of the pleasant experiences of travel is the meeting with former patients, who have substantially recovered from their nervous exhaustion, and are at work in their various occupations. I have thus had opportunity to watch the cases, from time to time, for many years, and have had a chance to see that the recovery is permanent; and also, to know that they grow stronger and more enduring, after all treatment is suspended. Cases that have been distressingly hypochondriacal, as well as the neurasthenic, and who have given up all hope of ever enjoying life again, I find to be cheerful, laborious, and hopeful.

Sequences of Neurasthenia.—Neurasthenia is the door which opens into quite a large number of diseases of the nervous system. It does not, necessarily, lead to any of these; it may never go beyond itself; but,

when neglected or treated improperly, it may, in time, advance to any one of quite a large number of familiar maladies of the nervous system. Some of these maladies are not of an organic or structural character; they are functional like neurasthenia itself; but they are, oftentimes, more obstinate than simple neurasthenia —not so disposed to yield to management. Neurasthenia may go on for years, sometimes for many years, before it reaches any of these diseases; but it may and does reach them, and becomes, in fact, one of the most frequent of their immediate causes.

Insanity (*Melancholia*).—One of the most familiar sequences of neurasthenia is insanity itself, especially in the form known as melancholia. Not a few of the cases of melancholia, in its different stages, that enter our asylums or inebriate homes, have passed through a long stage of neurasthenia, before they arrived at the condition where the mind is really and, perhaps, permanently disturbed. The change from simple neurasthenia to melancholia is sometimes gradual, and sometimes quite sudden. In some instances, there may be a very gradual decline, from a nervously exhausted state to the most serious stage of mental disorder. Under this class come not a few women—house-wives who are over-worked; mothers, worn by repeated child-bearing and prolonged lactation, complicated, perchance, with local disorders, such as laceration, enlargment, or inflammation.

Hysteria and Hystero-Epilepsy.—It is only a minority of the cases of hysteria and hystero-epilepsy that have first passed through the stage of neurasthenia. Both hysteria and hystero-epilepsy may arise in persons who have not been especially nervously exhausted, but whose mental organization is weak and ill-trained, and who, consequently, fall into the symptoms of

these disorders through needless apprehension or worry, or, perchance, catch them through psychical contagion. Such cases of hystero-epilepsy, as Charcot utilized in his experiments in the Salpétrière hospital, Paris, with metals and magnets, are not, usually or always, of a neurasthenic type; they are simply weak-minded, mentally untrained girls, who can usually be affected either way. Hysteria and hystero-epilepsy of this kind, mental epilepsy, was more common hundreds of years ago, before neurasthenia was thought of.

General Neuralgia.—One of the results of neglected neurasthenia is general neuralgia—by which I mean attacks of neuralgic pains flying about in different parts of the body, in distinction from fixed and local neuralgia—such, for example, as sciatica and tic douloureux, which may occur not only in the neurasthenic, but in persons of great strength and vigor, and who are not, in any way, anæmic or nervously exhausted. The neuralgia of the neurasthenic is more likely to take the phase of chronic flying pains in the lower extremities; or in the upper extremities; or, perchance, in the stomach or bowels, in the eye, or in the pelvic regions.

Inebriety.—A more common, indeed, a very common, and an increasingly common sequence of neurasthenia is inebriety. Indeed, the main cause of the increase and frequency of the disease, inebriety, in this country and in all highly civilized countries, is the increasing nervousness of the age. When a man becomes prostrated by exposure to heat—what is called heat-prostration—he oftentimes is left in a neurasthenic state. A few moments' exposure of this kind may be the source of neurasthenic invalidism, lasting, it may be, for months or years. While in this state, an irresistible desire for drinking alcoholic liquors may take possession, and

very suddenly, indeed, of one who never before had the least inclination for drink, and without any apparent cause, he may become an inebriate; an attack of inebriety may come on as suddenly as an attack of neuralgia, or insomnia, or hay-fever, and, like these, may often be a direct sequence of neurasthenia excited by exposure to heat. Neurasthenia excited by any other cause may have, and does have, just this effect; though not, usually, with such suddenness or violence. The neurasthenic state developed, as it is so often, by the shock of bereavement, of domestic disappointments and griefs, anxiety on account of financial troubles and worries, may open the door to inebriety; and, so to speak, push the patient in, and sometimes shut him up beyond remedy. Phenomena of this kind occur in those who have never been accustomed to drinking—sometimes in those who have been total abstainers all their lives, or who, at least, have never been excessive drinkers. Quite a large number of wealthy citizens of this country, merchants, manufacturers, speculators, and, in a few instances, professional men, who have acquired their means by constant friction, and great and excessive drafts on the nervous system, have sons who were born in the midst of this pressure and toil, who inherit the nervous diathesis and tendency to disease of the nervous system, which breaks out in the form of inebriety.

Meconism (*Opio-Mania*).—This form of excess in the use of narcotics is sometimes a sequel of neurasthenia. One of the effects of opium is to relieve, for the time, the depression—the hopelessness, worse than pain—from which neurasthenics suffer. It is, therefore, a temptation to use this drug; beginning, of course, with small doses, and increasing until the servant becomes the master—the patient a slave. In some cases

there is an alteration of opio-mania with inebriety; they must take in excess one of those two poisons, alcohol or opium. In one case in which I was consulted, the patient stated, positively, that it was impossible for him to get along without being an opium eater or an inebriate; that it made little difference which he took, whiskey or opium, either one or the other was sufficient for him. Not all cases of inebriety or opium eating have a neurasthenic origin, but a large number are of this kind. We can make a differential diagnosis of neurasthenic inebriety by the symptoms that accompany it. Inebriates of this kind always, or almost always, have other evidences of exhaustion, such as insomnia, headache, nervousness, irritability, neuralgia, and the like; and inebriety in these cases is just as truly a symptom of the exhausted state as the other symptoms accompanying it, and ought to be so regarded.

Inebriety and opium mania of this kind are to be treated like the other symptoms of neurasthenia, that is, by strong sedatives, alternating with tonics; and there are many of these cases, at least a considerable number, that can be treated outside of an asylum—at home—and while pursuing their regular business. I believe in inebriate asylums and have been for years their earnest advocate and defender, just as I believe in and advocate insane asylums, and there is no antagonism between them. There are, however, a large number of inebriates that can be successfully treated outside of an asylum, just as there are some cases of melancholia and other phases of insanity of a mild type that can be treated successfully by a physician without sending them to any institution whatever, and, indeed, more successfully than in any institution, provided they have sensible friends and proper sur-

roundings. The evil of opium-taking in nervous exhaustion is a growing one; constantly I am called upon to treat patients who have added the morphine habit to their weaknesses and pains.

One way in which neurasthenia induces inebriety is, that it causes, sometimes, a great and incredible tolerance of alcohol; in those cases they can bear immense doses without feeling any effects, good or bad—certainly no bad effects. Some of these cases are very interesting indeed; one of my medical patients afflicted at one time with cerebrasthenia (from which he has now recovered), at one stage of the disease, when he was at the very worst, could take a full tumbler of whiskey and not feel any bad effects, although he was not used to drinking when he was well. One of my hay fever patients, in whom, as is sometimes the case, the attacks were preceded by a number of days of profound exhaustion, though he was not accustomed to drink at all, tells me that in one of those attacks of exhaustion, alcoholic liquor, in any amount, has no effect whatever.

Disease of the Reproductive Organs.—Neurasthenia, long neglected or badly treated, and, sometimes, in the early or acute stages, is a common excitant of functional and, sometimes, of structural maladies of the reproductive organs. In males, irritability of the prostate gland and of the prostatic urethra; and in females, of the neck of the uterus and of the ovaries, may be a direct result of general neurasthenia. It is quite true that diseases of these parts are, themselves, excitants of neurasthenia; but, none the less, is it true that neurasthenia excites disease in them. There is, indeed, a constant action and inter-action between special organs; between themselves and between special organs and the nervous system in general; so

that, in individual cases, it may be quite hard to tell the seat of the primary neurotic implication. A want of recognition of this fact is the basis of an enormous quantity of non-expert reasoning on this subject, among specialists and general practitioners. If a female presents herself to a gynæcologist with evidences of inflammation or enlargement, or even irritation of the womb or ovaries, and has associated therewith a number of symptoms of neurasthenia as I have described them, the natural inference is, that the local disease is the cause of the general disease—an inference sometimes justified by facts and sometimes not; for the general neurasthenia is as likely to be the exciting cause of the local, as is the local trouble to be the cause of the general neurasthenia. The worst failures of skilled gynæcologists of our time are with just this class of cases; and, mainly, because they treat them locally, without treating them generally or constitutionally; or if they do treat them constitutionally, it is in a vague, desultory, half-hearted, incidental, and doubtful manner, that, in therapeutics, is always sure to fail of its purpose. While cases of this kind need, oftentimes, careful local treatment, yet such local treatment, however judiciously and patiently carried out, is wasted, unless it be accompanied by an equally patiently carried out constitutional treatment.

Exclusive dependence upon either local or general treatment is non-expertness, one-sidedness, halfness of therapeutics; for, if either one should be neglected, it should be, in some cases at least, the local; or, at least, the local should be made incidental or secondary; and it is creditable to one of the best known of our gynæcologists, Dr. Goodell, that he has been one of the first, in his department, to recognize this fact, and to illustrate it by interesting cases accompanied with just and

verifiable philosophizing upon this subject. Cases of this kind sometimes go around from one gynæcologist to another, seeking help and finding none, just as cases of neurasthenic asthenopia go around from one oculist to another, getting no information and no relief beyond this: that "there is nothing the matter with them;" which is equivalent to saying, that the ophthalmoscope can reveal nothing, and what the ophthalmoscope cannot reveal, does not exist.

My own habit in cases of this kind is, to obtain the co-operation of practical gynæcologists and oculists, and I have, oftentimes, thereby secured results which no one department alone could have achieved.

Hay Fever.—One very interesting sequel of neurasthenia is hay fever, which, philosophically analyzed, is simply a nervous idiosyncrasy, usually against some one or many external irritants, of which pollen, sunlight, dust, heat, foul air, smoke, and various fruits and flowers are the most familiar. But these external irritants, any one of them, or all combined, can no more excite hay fever than they can excite small-pox or leprosy, unless they strike on a nervous system predisposed; and one of the most important, indeed the most important, element in the predisposition is nervousness, though not always going on to neurasthenia.

While many hay-fever sufferers are apparently well and hardy, yet in all there is a neurotic element, if we can trace it, and in a large number of instances this neurotic element is visible in many ways—hay fever being only one of many symptoms, and not always, by any means, the most serious. This very year, one of my patients who is profoundly neurasthenic, has made an addition to his catalogue of symptoms, by an attack of the later form of hay fever. In countries

where neurasthenia is rare, hay fever is rare, and *vice versa;* they rise and fall together.

Writer's Cramp.—Writer's cramp is a disease which is characterized by a group of from fifteen to twenty symptoms; the cramp being one of the group only, not always present in all the cases.

There are several types of this disease. In quite a number of cases there is no neurasthenia; there is not even a marked nervous diathesis. There is only a local weakness of the nerves and muscles connected with the act of writing; there is, also, a form of this disease to which the term neurasthenic writer's cramp might be justly applied; and this form occurs in persons who are of a nervous constitution, who are nervously exhausted, and who descend into the symptoms of writer's cramp through the other symptoms of the neurasthenic state. Patients of this kind find that in writing they are troubled with pain, aching, heaviness, fatigue, tiredness of the arm, or, in some cases, a stiffness that suggests rheumatism—and they are sometimes so nervous that they cannot write at all continuously, without suffering from a nervousness which, without pain, compels them to stop.

While this chapter is in preparation, I have received a letter from a neurasthenic patient, the handwriting of which is so different from that of other letters which I have received from him, that I did not recognize it. In this letter he tells me that quite lately he has been troubled with this difficulty of writing—a nervous symptom of which, before, he knew nothing, although he had not been well for years. The letter is written in better style, he tells me, than most of his letters of late; yet there are many mistakes in it, and I should suppose it came from a regular writer's cramp patient. This patient soon recovered from this attack.

It is a satisfaction that writer's cramp of this variety (the neurasthenic) gives way to treatment more readily than any other form; the diagnosis is far more hopeful, and in many cases patients get well themselves—which is never the case with the severe form of writer's cramp. I have seen and treated quite a number of cases of neurasthenic writer's cramp where the recovery has been absolute.

Trance.—That morbid state of the nervous system which we call trance, but which is popularly known as hypnotism, somnambulism, catalepsy, all being special varieties of the special generic condition trance, is one of the interesting, though, perhaps, not most frequent, or the most serious of the sequels of neurasthenia.

Neurasthenia is not, by any means, the most common of the exciting causes of this state. In the middle ages, among wild, savage, and semi-barbarous races, trance existed, and has spread as a mental contagion, even among persons who have great strength of constitution, or at least who have but very little of the nerve element in them.

Trance of this variety, in its psychical form, is found to-day among certain classes of the people; but the majority of the cases of trance, among our better classes, are those who have entered that state through the doors of neurasthenia. Our so-called starving girls, with their ecstasies and visions, are oftentimes neurasthenic for years, before they develop trance phenomena.

Paralysis and Organic Disease of the Spinal Cord.—Temporary paralysis, or, at least, paralyses that are relievable and curable by treatment, are quite common in the course of neurasthenia, and they pass, oftentimes, by the name of hysterical paralysis, which,

when they are accompanied by the positive symptoms of hysteria, is entirely correct. But one may have true neurasthenic paralysis without any symptoms of hysteria proper preceding or accompanying it. Paralysis of this kind may affect the larynx, causing aphonia, or the neck of the bladder, causing retention or incontinence; or any one of the upper or lower extremities.

Paralyses of this kind may sometimes go away as soon as they come, and sometimes they need special and prolonged treatment. But they differ from the structural paralyses, in that they do get well, and get well perfectly, sometimes.

The belief which some have held, which some hold now, in relation to which many of the best physicians of our time are in doubt and fear, that neurasthenic symptoms are the predecessors of severe and incurable conditions of the spinal cord, such as ataxia, muscular atrophy, spinal meningitis and the like, are not in harmony with the facts, and will be held by no one who unites both the power and the opportunity for observing large numbers of cases through many years.

Many of the symptoms of neurasthenia resemble so nearly the symptoms of incipient, and even the final symptoms of sclerosis, that to distinguish them is very hard indeed; and yet, close as their resemblance is, there is, pathologically, a gulf, wide as the Atlantic, between them. I do not deny that, in occasional instances, neurasthenia neglected, exasperated by bad hygiene or by bad treatment, may be the precursor of sclerosis, or, at least, of permanent, fixed congestion of the cord or of its membranes—just as it is the possible precursor of certain forms of insanity—but it is not the rule that it should lead to these conditions, any more than it is the rule that it should lead to insanity.

Neurasthenia has symptoms enough of itself, and is bad enough and distressing enough, without adding to it that it is an early symptom of structural disease.

Certain Stages of Bright's Disease (*Albuminuria*). —Neurasthenia appears, in some cases, to prepare the way for those varied congestions and inflammations of the kidneys, to which, when they have reached a certain stage, the vague term, Bright's disease. is applied. This term, Bright's disease, is the one in use to include a variety of morbid conditions of the kidney; but the generic term, congestion, is, without doubt, the condition through which the kidney passes.

Neurasthenia, by the bad nutrition with which it is connected, would, itself, keep the circulation in a state of fluctuation and uncertainty, and prepare the way for congestion of the internal organs; especially on exposure to cold after over-exertion.

These congestions may be, at first, of a temporary character only, and may disappear as suddenly as they came. But in some cases they become chronic, and the kidneys assume a state where an examination of the urine shows both albumen and casts. I have seen quite a number of cases of what we call Bright's disease of the kidney, as judged by the presence of albumen and casts, that seemed to have followed a prolonged neurasthenic condition.

It is a pleasing and most interesting fact that these neurasthenic forms of kidney disease are amenable to proper treatment. A number of cases that I have treated gave all the symptoms of this condition under the microscope, and apparently recovered; and so far as can be seen, the recovery is permanent; and it appears, also, to be the direct result of the treatment used, and not a mere coincidence.

I do not use, for these cases, the internal routine

treatment of Bright's disease—for the very good reason that I have never seen any very good results from it—and many of these cases had tried it long before I had seen them. I treated them by general faradization and galvanization, by counter-irritation over the kidneys, persistently kept up, and by the administration of vegetable tonics—very much, indeed, as I treat the neurasthenic condition itself, when it attacks the spinal cord or the brain.

The effect of this treatment, in some cases, is seen in the urine, very speedily, after the treatment is begun.

A case of that kind, that was utterly given up, I lately treated with the best results; if this patient were to die of the disease of the kidneys, nevertheless, the improvement she has made under the treatment is a reality. Even in the later (the incurable) stages of Bright's disease, after dropsy has appeared, I have seen most pleasant, though not so thorough, results from this plan of treatment.

It is my conviction, from the study of quite a number of these cases, and a careful watch over them after the treatment has been discontinued, that for certain forms of Bright's disease with albumen and casts in the urine, even in considerable quantity, and with the debility that accompanies such conditions, there can be relief, and, so far as can be seen, a permanent cure —not by the old plan of treatment, but by the new—that is, by proper external applications in the neighborhood of the kidneys, and by proper sedatives and tonics internally.[1]

[1] For more detailed discussion of some of the questions raised in this chapter, the reader is referred to my monograph on "A New Theory of Trance (The Scientific Bases of Delusions)," to several papers by Dr. Crothers and by myself, in different issues of the *Quarterly Journal of Inebriety*, and to an abstract of my essay read before The British Medical Association, August, 1879, as published in the *British Medical Journal*, Aug. 23d, 1879.

CHAPTER V.

TREATMENT AND HYGIENE OF NERVOUS EXHAUSTION.

THE general principles by which we are to be guided in the treatment of neurasthenia and allied disorders, may be condensed in the following aphorisms:

1. The treatment should be constitutional, with special attention to local manifestations, whenever they become severe. To devote the whole attention to special and local phases; as spinal irritation, cerebral irritation, cerebral hyperæmia, asthenopia, oxaluria, insomnia, or nervous dyspepsia is unphilosophical and can never be successful.

2. Dependence should be placed not on any one exclusive mode of treatment, but rather on a combination of various methods, local and general.

3. The treatment should be occasionally changed, according to the needs of the patient.

It is not possible to set the rudder, so that a ship may steer straight across the Atlantic; it must be watched each moment and shifted with the winds and currents; it is usually impossible by a single prescription to steer a neurasthenic sufferer over the long voyage to health. I rarely allow a patient to take any one important prescription for a long time without either seeing them or hearing from them.

Individual idiosyncrasies must be religiously respected, and when we find one cannot bear any one remedy or mode of treatment, we can fall back on other remedies.

Each case of neurasthenia is a study of itself. No two cases are alike in all details. If two cases are treated precisely alike in all the details from beginning to end, it is probable that one of them is treated wrong.

4. The treatment should sometimes and by intervals be entirely withdrawn. Suspending treatment has a positive effect upon the system. Oftentimes it makes a direct impression, which may be better than continuous treatment. A friend of mine, formerly a sea captain, states that when sleeping in his cabin at night, if the sentinel walking the deck above him stopped, it would always wake him. The sudden sensation of nervous activity, like a jar upon the nerves, aroused him from his slumber. I find that patients sometimes do better—make more decided progress—in these intervals of treatment than while the most active measures are being used. Patients sometimes imagine this to be a proof of the valuelessness of the medicines; but it is in reality a proof of their power. It has been said that success in life depends largely upon knowing just where to stop. In the practice of medicine, this maxim is certainly sound; and to know where to stop, to let up, to modify the treatment, is one of the best tests of medical skill.

When patients are a long time under care, I frequently have them take a sedative prescription or mode of treatment one week, a tonic the second week; and the third week to do nothing whatever.

This method has the recommendation of safety, in case anything in the treatment should meet an idiosyncrasy; and it also lessens the risk of irritating the stomach. One of very many evils of domestic and self-treatment of these cases is the tendency to overdo whatever medication is employed.

5. Medical treatment, to be surely effective, must be

combined with hygienic treatment. In correct analysis, hygiene is therapeutics, the distinctions we are wont to draw between them being purely arbitrary. In some cases, particularly in cerebrasthenia (brain exhaustion), vigorous out-door exercise is required, and the more, within reasonable limits, the better; in other cases, only very moderate exercise should be allowed; in other cases, particularly in the severe myelasthenia or exhaustion of the cord, in women, absolute rest in bed, in quiet, if not darkened rooms, is needed, if we would get in the shortest possible time the best results. The practical mistake, so often made, is in treating all these classes in the same way, shutting up those who need exercise, and exhorting those to work and travel who should be kept in bed.

Digestive Hygiene.—In diet, also, all cannot be treated alike; the reaction against the starvation theories of the last century has induced a return to the habit of over-feeding; hence, some need to be cautioned in this regard, while others must be coaxed and tempted to eat more than has been their custom. Abstaining from starch and sugars, or using these substances but moderately, and in their place making as free use as the digestive organs will allow of fats, oils, as fish, oysters, butter and milk, is a potent adjunct to the treatment.

One of the great wants of the day is an increase of fat in the food; and fat in such a form that it can be assimilated without injuring seriously the digestive apparatus.

Our fathers could eat pork and digest it, and thus they obtained in their daily meals all the fat the system needed—sometimes, perhaps, in excess; but, we cannot digest pork as they could, and. consequently, we are suffering in all directions for want of fat.

This want, the use of the oil emulsions, if properly prepared, in a certain degree supplies; but there are some stomachs that cannot bear even these emulsions, and they are not to be recommended for them, until the system is first strengthened.

Patients are apt to go from the extreme of underfeeding to the extreme of overfeeding. I see both forms of error illustrated in my cases.

One young man who had any number of neurasthenic symptoms, but who was accustomed to live freely at the hotels in this city, found that nearly all his symptoms left him when he reduced the quantity of his food one-half. If he had been taking some medicine for his disease, at that time, he would have supposed that a brilliant result had been obtained by it. On the other hand, a young man who consulted me during the past year, happened to say to me that he was living mostly on oatmeal, eating but very little, as his stomach was exceedingly delicate. He was thin, anæmic, as well as neurasthenic, and very much depressed. I told him he was starving himself. A few weeks afterwards, when he called upon me, he was very much increased in flesh, and better in his health. He said that my suggestion that he was starving himself made an impression upon his mind; that he had reformed his habits, and had been blessed accordingly.

Even when there is severe nervous dyspepsia, it is a mistake to be over rigid in the diet; starvation of the body increases the very weakness of the stomach itself, and thus makes the indigestion worse, for the stomach itself needs nourishment.

Rectal Alimentation.—In cases where the stomach is very weak and exhaustion profound, it is well to nourish the patient through the rectum. This can be

done by the injection of defibrinated blood, or by milk, or the juice of beef. The evidence that patients can be nourished for weeks in this way, and gain strength thereby, seems to be very satisfactory indeed.

In some cases of chronic nervous disturbance, it is well to try for a limited time an exclusively vegetable and fish diet. It is the belief of certain English physicians that vegetable food produces more stable compounds than meat; a vegetable diet has been tried in epilepsy, in the hospitals, with a certain degree of success. All the functional nervous diseases of which I am here speaking are characterized by instability of nerve-force, and if there be anything in this theory, might well be treated in accordance with it. The return to mixed diet should be gradual; at first for one meal a day, or three times a week. Even if the chemical theory of the greater stability of the compounds made by vegetable food be unsound, yet it may be claimed, with plausibility at least, that a most powerful impression, such as is involved in a sudden change of diet, might, in some cases, do good.

Milk Diet.— A diet exclusively or largely of milk is sometimes invaluable in bed-ridden cases. For dyspepsia it may be one of the best prescriptions. But there are temperaments that will not bear it.

Very frequent feeding—small quantities taken at a time—has been suggested by Brown Séquard; and in cases where debility of the stomach is found, it is of service to take this method. Any kind of light food may be used in this frequent feeding, and the meals may be all the way from half an hour to an hour or two hours apart; and the meals be increased in frequency, as the tone of the stomach will admit. This method of dieting is worthy of trial in cases where confinement in bed is necessary for a time, and where

debility is very great, and where food of almost any quantity is liable to irritate. In any especially severe form of nervous dyspepsia, when the stomach always feels worse when it is empty, feeding frequently—never overloading the digestive tract—may be tried. The English and Germans, as a rule, eat oftener than the Americans.

The class of nervous invalids—who can moderately exercise and keep on with their business, at the same time taking tonic treatment—also need much watching in regard to what they do; for their temptation is to overdo everything. The rule I generally give is, in all their exercise to stop short of much fatigue; if they get tired out, they have probably done too much; there should always be force in reserve. Many such persons are advised by friends and by physicians to work with all their might—hoe corn, lift heavy weights, or take fearful tramps, which is much like advising a bankrupt to live extravagantly.

Rest Cure vs. Work Cure.—There is a time for *rest*, and there is a time for *work*, in the treatment of nervous disease. About a month ago, a patient with ataxy came to me from a distant city in the West. I said to him, "You have left behind you a better doctor than you can find here." He asked, "Whom?" I said, "*Rest!*" I prescribed it for him and put him to bed. He had been accustomed to take excessive exercise—at least, far more than was good. The next day, another gentleman came, also from a distant city, with the history of a certain form of cerebrasthenia—brain exhaustion—without any myelasthenia, or spinal exhaustion—and of a type that would be benefited, rather than injured, by a degree of mental and physical activity. He had felt disheartened, and thought there was little for him to do in this world. He was

of about middle life, and I told him that he probably was no more than "half-way home," and so far as the disease was concerned, he might live and be active for thirty or forty years longer. When he returned, I said to him, "You have come a long distance to consult me, but you have left at home a better physician than you can get here." He asked, "Who is it?" I said, "*Work;* work I prescribe for you. Take that in connection with all your medicine, and you will recover." These two cases make clear the opposite methods of treatment. Then also frequent change of work is to be advised; steady activity, but not in any single direction, resting by alternation of work. The hygiene of nervous diseases has three gospels—rest, work, and change of work.

Rest and Isolation.—The treatment of certain cases of nervous diseases, functional and organic, by putting the patient in bed and enforcing inactivity for a limited period, is sometimes one of the best possible means of relief and cure. One of the great benefits that an attack of acute disease, as typhoid fever, confers on a neurasthenic patient, is the absolute rest it compels. Improvement in flesh is very soon seen, and in time there comes also improvement in strength, which, when carefully husbanded and directed, may become a permanent addition to the patient's stock of vitality. As this method of treatment was formerly used, evil as well as good might be accomplished, for the confinement in dark rooms, the low diet, the abstraction of blood with which this rest treatment was often associated, tended to pull down rather than build up the constitution, and in the times of our fathers, cases of dyspepsia even were managed in this way with the effect of weakening the already weakened frame. But rest combined with proper nourishment,

passive exercise, and the judicious and varied employment of sedatives and tonics, especially of electricity, in the modes of general faradization and central galvanization, is, in many cases of myelasthenia, exhaustion of the spine, superior to any other plan of treatment, since it really includes all the best systems of past and personal experience.

Strümpel, of Leipsic, has lately published a report of a case of general anæsthesia, where there was entire paralysis of taste and smell, and blindness of the left eye and deafness of the right ear, and also entire lack of sensibility of the skin, mucous membranes, and of the muscles. *One eye and one ear alone* were the means of communication with external nature; when this one sound eye was closed and the one sound ear was stopped, the patient in a few minutes fell into deep sleep.

This one case powerfully illustrates how irritating to the brain are the ordinary waves of light and sound. The same fact is proved by the experience of every one; for we all sleep much later on dark mornings, and when we take a nap during the day usually wake up after an hour or two. In the hyperæsthesia of nervous disease, the sensitiveness of the optic and auditory nerves, as well as of the brain, becomes much exalted, and the heed of avoiding external irritation all the more imperative. I have under my care a man who has been profoundly exhausted nervously and sometimes hysterical, and who, when he feels especially depressed, puts corks in both ears and shuts himself up in a dark closet. It is a method that has, however, its difficulties, disadvantages, and failures, but in a certain class of nervous diseases, especially in women, the benefits far overbalance the trouble and sacrifice.

Among the difficulties are the prejudices, and fears, and whims of friends. and the apprehension on the part of the patient that confinement is a more burdensome thing than it is really found to be by those who give it a fair trial; but when these preliminaries are satisfactorily arranged, and the sufferer has once put herself under treatment, all the rest is comparatively easy; in much shorter time than one would suppose, she becomes accustomed to the restraint; the appetite under the stimulus of electricity, the very best of tonics, and tempting food, is often much better than when in active duties, and in a few days the fat begins to roll up in the face, and subsequently over the body. The observations of Mitchell and Goodell on this point are verifiable.

One of the practical difficulties, for the solution of which no mathematical rule can be given, is the time required for this rigid confinement, and the method of bringing back the patient to ordinary life.

Many years ago I observed that nervous patients were better on Sundays, when they did nothing, than on other days; and that even the nervously dyspeptic could eat more on that day, and with less distress than on secular days. For a time the reason was not clear to me. It is the repose of body and mind that makes it possible to eat so much on this day of rest, and that makes the day a hygienic blessing to civilization. There are patients who need to make every day a Sabbath—to have sixty, or ninety, or more, consecutive days of rest.

The isolation from friends on which Charcot, Mitchell, and others so earnestly insist, I do not always find to be necessary; it is certainly unnecessary with the majority of such patients; some of the best possible results I have secured when the patient was under

the direct care of relatives and friends. Charcot tells me that for ten years he has been accustomed to isolate patients, not even allowing their mothers to see them occasionally, and in the presence of an attendant. In the use of this, as in the use of all plans and devices for overcoming chronic disease, there can be no routine, cast-iron law; each case is a different case from any other, with different symptoms, history, idiosyncrasies, antagonisms and affinities. In deciding the question whether a female patient is or is not to be removed from home and friends, the character of the friends themselves is to be considered: if they are unduly emotional, superstitious, and demonstrative; if they constantly burden and weary her with oppressive talk and attention, then removal may be indispensable, without which all treatment is thrown away; the constant turning of the patient's mind on the body by conversation, consultation, and sympathy in its various modes of expression, counter-balancing manifold all possible therapeutic agencies; oil and water are poured on the same fire, a gallon of the one to a gill of the other. When such cases are taken out of these really hostile influences, and carried in any direction and kept resolutely apart from those who know and love and pity them, they are so far delivered from one of the worst possible exciting causes of functional nervous disease, and an opportunity is given for the forces of nature and medication to work together without friction toward recovery. In all forms of disease, mental therapeutics is often more useful than any other kind of therapeutics, and this forced seclusion is a powerful and legitimate means of acting on the mind; it compels the patient to do what they are far too much disposed to do of themselves, that is, remain inactive, and this systematic inactivity in time

tends to cure the desire for inactivity; they seek for a change, and long for exertion, while the rest, electricity, and tonics give them strength to attempt it.

A great factor in these cases is the therapeutic power of a radically new impression of any kind; hence the real advantage, in some cases, and at certain stages, of a change of doctors, even from a superior to an inferior, or at least, a radical revolution in the mode of treatment.

This same question of seclusion—restraint or non-restraint—comes up in the management of insanity, especially in the early stages of the milder forms of melancholia. In these cases it becomes necessary for the physician on whom the responsibility of the case rests to make a diagnosis of the character of the patient's friends and surroundings, before deciding the very important question of restraint or non-restraint. There are cases which I have seen in my own practice, where the best results, satisfactory both in rapidity and permanence, are secured by treating the patients at home in the midst of her friends, who care for her and execute the directions of the physician; and there are cases where speedy removal is the only wise course.

Few things in my professional experience have been more pleasing than the permanent results that I have been enabled to obtain in severe and long-standing cases of hysteria, hystero-epilepsy, neurasthenia, and allied affections in nervous women when treated at home, or among relatives who were sufficiently sensible to know how to co-operate with the required treatment. I recall in particular an aggravated case of hysteria with convulsions, hallucinations, and profound depression, that was taken directly to the residence of a relative physician, and kept there for a number of weeks under treatment, until, as a reward

of perseverance, she was permanently restored, and to this day remains well and active. This patient was not allowed to see any one but a relative, strangers being systematically excluded whenever they called; and yet a more delightful result could not have been expected from any plan of treatment, and is, I am sure, rarely experienced by those who have to do with cases of this kind.

The main reliance in this case was general faradization and central galvanization, very little local or medical treatment being used. Some years ago I had under care a young lady who was so thoroughly neurasthenic that she could scarcely move about the house, the result mainly of over-work and confinement in a routine occupation. She was treated in the house of a relative, and although the symptoms were unusually obstinate, and a most extraordinary sensitiveness to medicine of nearly all kinds made it impossible to use the leading sedatives and tonics, yet she gradually improved, and last year I saw her as a bride with much increase of flesh, and in sufficient health to walk two or three miles.

Brain-work in Nervous Diseases.—Nervous invalids do not always need to suspend all labor of the brain—better, indeed, that they should be actively though pleasantly employed. The most distressing cases of nervous debility that I have seen have been in men who have suddenly retired from business. When a muscle is weakened through disease, we try to strengthen it through passive and moderate active exercise, believing that thereby its nutrition is improved. This same law the brain must obey. The feeble and tired brain, like the feeble and tired muscle, needs a certain amount of gymnastics. Labor of the intellect of the higher sort saves us from friction of the emo-

tions of the lower sort, and thus becomes a positive and valuable remedial agency. For this reason I rarely advise patients to permanently leave their business. provided they are happy and prosperous in it; but rather to fight out the battle on the lines where they are.

6. The last general suggestion is, that in the treatment of nervous disease, we should study with all our energy the psychology of our patients; we must make a diagnosis of the intellectual character as well as of the disease, before we can make a prognosis or adopt a plan of treatment. There are those whose minds are so organized, lacking some qualities and having in excess usually a preponderance of the emotional, with a deficiency of the higher intellectual qualities—that they act badly under any treatment, however wise. Some patients take a pleasure in their distresses; it would be cruel to cure them; their pains are their possessions. Any man wishing to make them well would be no better than a thief or a robber. There are those whose chief felicity in life consists in doctoring and being doctored, and to whom the removal of their bodily ills would be like the death of long-cherished friends. When such persons come under our care, we cannot expect any treatment to be as successful as with those of strong and active intellects, who understate rather than magnify their troubles, and are resolutely determined to get well.

On the other hand, there are some who are organized to bear sickness; they do not need to be well; they can be laborious, useful, and happy, while in a condition of partial invalidism; provided only they are in working order, they are content, even though they be not entirely free from weakness and pains.

Other conditions being the same, the prognosis is

better, the greater the amount of intellect, the less the quantity of emotion in a patient. Many would never have been sick at all in this way, but for the very predominance of their emotional nature. This is as true of men as of women, and is true of some of the most agreeable and excellent people in society.

I have observed that when neurasthenia attacks one, he is apt to break down at first, if not last, at the point where he is weakest psychologically. Morbid fears, for example, are most likely to attack the modest, the quiet, the diffident and retiring; although I have seen them occasionally in some of their forms in the airy, the egotistical, self-suffering, and conceited. A thoroughly resolute person is less likely to be hopeless and despairing in nervous exhaustion, than one who is shrinking and timid and distrustful.

Mental Therapeutics.—In reference to the mental treatment of neurasthenia and allied maladies, there are two prevailing errors. First, that mind alone without any objective medication or influence, is all that is necessary; and secondly, that this method can be employed in an off-hand, haphazard manner, without study or system. To rely on mental therapeutics alone, disregarding all electricity, massage, and internal medication, is unscientific, and in many cases will be unsuccessful; the mind is a strong force, but it is not the only force that can be used for the control of functional nervous affections. These errors seem to have arisen from the popular belief that the symptoms of neurasthenia, as here set forth, are imaginary, having no real objective existence, and that they are to be expelled by the same influence—the patient's own mind. Granted what is undeniable, that the emotions, by long dwelling upon the body, may excite various diseases; still, disease so caused is as real, as

serious often, as disease excited in any other way, and may need as active treatment; and can no more be blown away by a few words of encouragement or ridicule than can an attack of small-pox or typhoid fever.

All these functional, like all organic, diseases can be relieved by mental treatment, but there is no more reason for restricting this treatment to mental therapeutics in these than in any other morbid states.

Combination of Remedies.—To the combination of neurotics I have given much thought and study, watching the effects in a large variety of diseases in divers stages and conditions. A combination of medicines—provided the mixtures be made with judgment and their effects are carefully watched—is oftentimes of greater value in neurasthenia and allied affections than any one remedy when used alone; the prejudice against what is called polypharmacy, like the prejudice against cathartics, is derived from the bad use, the abuse, the overuse of what, when wisely directed, is a sound and immensely valuable principle of therapeutics. After we have found out the physiological and therapeutical action of any remedy, we can, on theoretical principles, logically and consistently combine that remedy with any other remedy whose physiological and therapeutical properties we also understand, with the justly founded expectation that the two will reinforce and aid each other and co-operate in bringing about the desired effect. In practice we find such to be the case; not only two, but three and more drugs can be thus combined so as to produce a therapeutical agent far superior to any one of the constituents when used alone.

The combination of external with internal treatment, electricity, massage, counter-irritations, and various

sedative tonic medications, is especially efficacious and desirable, and least of all likely to produce incompatible results. The popular fashion of trying one remedy for a time, then another and another in succession, for severe cases of nervous exhaustion, is as unwise as it is foolish in putting a single horse to a heavy load, tire him out, then to hitch on another, and so on, instead of harnessing a number in a team, and have them all pull together. Where the very best remedy fails when used alone, it may succeed when reinforced by a number of other remedies or modes of treatment, medical or hygienic.

Enumeration of Principal Remedies.—The ancients classed the divinities as major and minor—*Dii majores, Dii minores.* Similarly, neurotics may be divided into major and minor remedies.

Among the major remedies, *ergot* is especially worthy of note. Just how ergot acts in nervous diseases is not known, nor indeed are we likely to know in satisfactory detail the action of any remedy. That ergot contracts the blood-vessels, and thus is useful in congestions of the brain and spinal cord, is one of the clearly established facts in physiology, and is one of the few definite, solid foundations for therapeutics; but that this effect on the blood-vessels is all that there is in ergot in its action on the body, no philosophical student of nervous diseases would claim. Indeed, this contraction of the blood-vessels must be a result as well as a cause. Behind and beyond all this there is an influence which we cannot analyze. One advantage of ergot is the immediateness of its effects, particularly in cerebral and spinal hyperæmia. The particular doses of ergot need important modifications in special cases. In some instances, very large quantities of ergotine may be given with benefit and without

any harm that I can trace. I give ergot for immediate effects, for sick headaches, and for headaches of other kinds, and, for long-continued action, in irritable prostate, spermatorrhœa, and various other conditions. The doses indicated in the books are no guide.

Arsenic.—Another of these *Dii majores* of neuro-therapeutics is *arsenic* in its different forms. I use, not only Fowler's solution, but De Valangin's, with also the English preparation of the chloro-phosphide. Arsenic is a remedy the effects of which are not, as a rule, felt at once. It needs to be kept up—to be persevered with for many weeks, oftentimes for many months. In some cases, no good comes until the physiological effects have been produced.

Cannabis Indica.—Another remedy that perhaps will become, if it is not already, one of the major divinities of neurology, is *cannabis indica*. This remedy has the reputation of untrustworthiness and unreliability, both of preparation and of action. This reputation it is very fortunately losing. I find that for some conditions cannabis indica is one of the most trustworthy, most reliable, and valuable of remedies. It is one of the drugs, by the proper use of which the treatment of sick headache, for example, has been within a few years revolutionized, both for temporary relief at the beginning of an attack and during the attack, and as a permanent cure, provided its action is maintained for weeks and months. It is one of the most certain and convenient and agreeable of all the preparations used in neuro-therapeutics. Its quick and permanent influence over the symptoms of headache suggests its great value in other conditions allied to sick headache, or from which sick headache springs; and I am accustomed now to use it in the different phases or manifestations of neurasthenia and kindred

affections. I use it sometimes alone, sometimes in combination with various tonics and sedatives.

Caffeine.—Another remedy, not very widely known, but one the value of which is easily proved, is finely powdered *citrate of caffeine.* Some years since, I called the attention of the profession to the value of this remedy in sick headache as a means of temporary relief at the beginning of an attack; very many physicians have obtained the same results. I now use this remedy for other symptoms besides sick headache, such as backache—what may be called headache in the back—and malaise, general depression. A disadvantage of this remedy is, that it produces wakefulness, and therefore cannot be taken in the latter part of the day. I use it in doses of from 0.18 to 0.30 grams and repeat if needful.

I have been many times asked why the drinking of a cup of coffee will not have the same effect as taking caffeine, or even tea, the theine of which much resembles caffeine. In some cases, one or two cups of coffee or tea will have the same temporary effect as a small dose of caffeine, but usually there is not sufficient of the active principle in the coffee that we drink to relieve severe headache.

Aubert estimates that a cup of coffee contains about 0.1 to 0.12 gms. of caffeine, and a cup of strong tea a similar quantity. This amount is not sufficient to break up a headache attack, for which I prescribe quite large doses. To this must be added, that the milk and sugar are likely to interfere more or less, especially where the stomach is disturbed.

Poisonous Effects of Caffeine—Tea Tasting, Caffeinism.—I have never seen any serious effects from caffeine, even when taken very freely, but in one case, the wife of one of my medical friends, who seemed to

have an idiosyncrasy against it, just as one may have an idiosyncrasy against any other drugs, or articles of food.

The majority of persons can drink quite freely of tea all their lives without being perceptibly harmed; this is the experience of millions upon millions of the human race in the different stages of semi-civilization and high civilization, and under various climes. In our high civilization, and especially in America, there is developing a small, though increasing number of persons, who have an idiosyncrasy against tea, are made nervous and kept awake by a very slight dose, and cannot habitually use it.

Quite a number of years ago, I had under care a case of cerebral disease in a gentleman who had been a "tea taster" downtown, and his wife attributed his malady to his excess in the drinking and inhalation of tea. The subject was then an entirely new one to me, and I took pains to investigate the health of the tea tasters in this city. The general result of these investigations, which were never published or even written out, were as follows:

1. That the great majority of tea tasters were not perceptibly injured by their occupation. There were instances of persons who had pursued this calling for very many years unto old age and had not been harmed thereby. In the case of my own patient, there was no proof that the tea tasting was even an incidental factor in the causation of his brain disorder.

2. A small percentage were apparently made nervous by professional tea tasting, just as some are made nervous by excessive tea drinking. Their symptoms are wakefulness, nervousness, irritable heart, with palpitation and nervous dyspepsia, and so forth.

When Dr. W. J. Morton read his paper[1] before the American Neurological Association, I concluded that he must have investigated the matter more thoroughly than I, or that, through the increasing nerve-sensitiveness of the age, the number of persons specially susceptible to the active principle of tea had increased. I was, therefore, much interested in a paper just published on Tea Tasters and the Healthfulness of their Pursuit, by Dr. C. L. Dana,[2] wherein he concludes from an investigation since the publication of Dr. Morton's paper, that tea tasting as a profession is not injurious to health.

Somewhere between these extremes, but nearer to Dr. Dana than to Dr. Morton, the truth probably lies. It is certain that Dr. Dana obtained the same results from his investigations that I obtained, ten years before, and it is clear, also, that his inquiry was more thorough than mine.

It is certain, on the other hand, that some individuals cannot tolerate tea, and so far forth Dr. Morton is right. This idiosyncrasy I meet with among my nervous patients. To this array of symptoms produced by tea or coffee I would suggest the term *caffeinism*, which is analogous to chloralism, bromism, and alcoholism. These symptoms are *just such symptoms as are found in neurasthenia from other exciting causes; they are not of themselves diagnostic.* Only the history and very close study of any case makes it possible to establish beyond doubt that such and such neurasthenic symptoms as morbid fear, nervous dyspepsia, vertigo, sick headache, insomnia, are the sole effects of excess in the use or tasting of tea. It is not

[1] Tea Drinkers' Disorder, or the Toxic Effects of Tea. "Journal of Nervous Diseases," October, 1879.

[2] "Medical Record," Jan. 24th, 1880.

impossible that Dr. Morton may have been misled in this way. Very recently, since the publication of Dr. Dana's paper, I requested a former patient to repeat the inquiries down-town, among the class of tea brokers with whom he was somewhat acquainted. The result of his investigation was identical with that obtained by Dr. Dana and myself. He found a number of aged and healthy individuals among the tea tasters.

In our climate, coffee is far more likely to produce caffeinism than tea. In the South, and in warm climates generally, coffee is tolerated much better than in cold climates; with tea this difference is less marked. I have often produced mild temporary symptoms of caffeinism by the administration of repeated doses of caffeine for sick headache, but caffeinism thus induced passes away in a day or two. The best antidote to caffeinism is found in the bromides.

Coca.—Allied to caffeine is *coca*, belonging, indeed, to the same family; indeed, it is the active principle common to coffee, tea, guarana, and chocolate. The value of coca as a means of preserving the strength, while abstaining from ordinary food, is erroneously exaggerated in the stock anecdotes that appear in our medical literature on this subject; but it has, without doubt, a special and most interesting sustaining and tonic power. It relieves the pain and uneasiness that follow over-exertion, and the peculiar distress that comes from sleepless nights, for which purpose, I may say, caffeine may also be used.

Zinc Combinations.—The zinc preparations, particularly the bromide, valerianate, and oxide, are sedatives of very great value in various neurasthenias and I use them with great freedom.

The zincs I use much in choreic disorders; one of my often used prescriptions, which, however, I fre-

quently modify to suit special cases, is the following:

Bromide zinc,
Valerianate zinc,
Oxide zinc . . . . . āā .065
Phosphide zinc 003
For one pill.

Sometimes *macrotin* is added to the above. It is a remedy, the value of which in choreic conditions is undeniable, and I am persuaded that its use need not be restricted to those conditions.

Duboisia, the new remedy from Australia, is likely to take a minor if not a major place among the resources of the neurologist. Its effect is somewhat like that of atropine, but yet not entirely like it; and, for the symptom of hyperidrosis, seems to be more effective, according to experiments that I have made with it.

There are three other remedies which I use considerably, particularly in renal and bladder complications, and genito-urinary disturbances, viz., the *trailing arbutus*, *eucalyptus*, and *hydrastis*. I believe that these remedies, which I often give in combination, have a tonic power, not only in sexual or genito-urinary neurasthenia, but are of service even where there is no genito-urinary complication.

I have used with satisfaction the following combination:

Fluid extr. epigea repens,
Fluid extr. eucalyptus,
Fluid extr. hydrastis,
Fluid extr. jaborandi . . . . . āā 32 grams.
Five grams a dose.

Bromides.—It is impossible to speak of the treat-

ment of this class of troubles without referring to the *bromides* of potassium, ammonium, and sodium and lime, and lithium. The *bromide of manganese*, if it could be made at a reasonable cost, might be an addition to our list of the bromides. Of the bromides now in use, the sodium bromides may now be classed among the old remedies. Their great value in epilepsy has long been known. They are not, however, so well understood in other nervous diseases of a functional character. The bromides may be used in large doses, frequently repeated, until the powerful sedative effect is produced, even when there is no sleeplessness; those who use the bromides in this way must know where to stop or to reduce the dose. They are not to be used in this way domestically.

The bromides, like electricity and massage, give the system rest by slowing down and steadying the nerve-activity.

In order to get complete effects of the bromides, large doses are often necessary. The doses indicated in the books are of little value in many cases. When freely diluted with water, bromides can be given in two-gram and four gram doses, with effects that are clearly perceptible within a day or two, or within a few days, while the same bromides given in the doses indicated in the books, for a long time, would have no influence. Given in this way, they do not injure the stomach, or the nervous system, except in rare cases, where there is an idiosyncrasy against them. The bromides are not to be taken in these large doses for a long time—the physician is to study their effects, and stop them, sometimes, in a few days after they are begun, substituting a different mode of treatment of some kind; and there are individuals to whom they are not to be given in any dose. I not unfrequently

see cases that have been harmed by injudiciously using the bromides.

They are used too long; they are too popular as domestic remedies. The great question is, to know when to stop using them. This question is to be answered differently to all different circumstances. There are some temperaments that are injured by the average dose of them, and there are other temperaments that can bear them in very large doses. They do not cure neurasthenia, and when used too long—like chloral—they cause it; but rightly used—stopped when they have been sufficiently used—they are a means of highest value.

By a proper combination with Fowler's solution, the bromic acne can usually be prevented.

It is sometimes of the highest advantage to mildly bromize a patient for a few days or longer—bromism gives the system a rest, like a vacation.

Symptoms of bromism, even when quite profound, generally pass away in a few days after stopping the remedy, and if necessary, the disappearance of these symptoms can be hastened by tonics.

Chloral.—A remedy to be ranked with alcohol and opium is chloral, which is now greatly used, and greatly over-used.

I mention it here, not as a remedy to be prescribed usually for neurasthenia, but for the same reason that I mention opium and alcohol; that is, as one of the remedies to be avoided. Indeed, one of the first signs and proofs of good results of the treatment of these cases is, that they can dispense with their opium and alcohol, or chloral; and this is one of the important objects for which many of these cases consult me.

Forcing sleep by large doses of chloral night after night is not, in any sense, a treatment of neuras-

thenia, but rather one of the means of bringing on certain phases of that state. Chloral, if used at all, should be used only under the advice of a physician, just as with opium and alcohol. If ever I use chloral, it is usually but for a time, to bridge over a certain crisis, and usually in combination with other remedies which, to a certain extent, mitigate its evil effects.

Chloral Asthenopia.—One of the evil effects of chloral, concerning which little seems to be known, is an irritable condition of the eyes. A lady that I know, and who has been accustomed to use considerable chloral, at times is very likely to have an attack of weak eyes, with choreic movements of the lids, and profuse watering, with sensitiveness to light, and a smarting and stinging sensation. A number of cases of a like character have been brought to my attention. I observed in the journals, recently, two or three reports of somewhat similar cases.

The use of chloral, indeed, is a growing evil, both in this country and in England. Many of our opium-eaters are also chloral takers; the helpless sufferer being the slave of two tyrants at once. It is one of the problems of this age, how to stop this rapidly increasing habit of taking drugs that force sleep. It is designed that this treatise, and especially this chapter, shall be a help toward the solution of the problem.

Strychnia is one of our older remedies, and I use it sometimes alone, but very frequently in combination with other remedies; yet it cannot be used in all cases, for sometimes it has a depressing effect. In other cases, it is too exciting.

Opium, in small doses, is excellent for many phases of neurasthenia; and were it not for the danger of forming the opium habit, I should use it more frequently than I do. I am obliged to treat too many

cases of the opium habit to be reckless in using opium as a remedy. Very closely watched, it is excellent in certain forms of hypochondria and melancholia.

Alcohol also, in the form of wine, particularly claret and Burgundy, is to be advised in some cases of this kind, but not recklessly, or without reference to the age, character, and temperament of the patient. Alcohol is, for some, one of the best of our hypnotics, in cases where the bromides fail to produce sleep. Where chloral causes severe headache next morning, claret wine, freely used, may produce satisfactory effects, without any unpleasant after-effects. I do not mention this as a general prescription; I simply say there are cases of which the physician must judge. It has the same objection, however, as opium—that its use may lead to inebriety. In the treatment of nervous cases, it is sometimes necessary to use all of these potent remedies in incredibly and absurdly small doses.

The *mineral acids* are likewise old remedies, but they are good remedies. Dilute nitro-muriatic acid, either alone or combined with the vegetable bitters, I use in different forms of nervous exhaustion, especially where the urine is over-loaded, as it often is, with oxalates and urates. The great results claimed for them by Golding Bird are not, however, in all respects verifiable. As a routine, unbending treatment for the symptom oxaluria, it is as unscientific as possible.

Aromatic sulphuric acid, in the ordinary dose, seems to act in some cases with almost specific power.

Of *cod-liver oil* I may say that it probably does more for the nervous than it does for the consumptive. Oil and fats—like cream and butter—are nerve food, and if used judiciously, as the stomach can bear them, act both as food and as medicine. The oil I use gen-

erally in the form of emulsion, and I use it with great freedom.

The Phosphates.—Of *phosphates* this can be said: that, like iron and quinine, they belong to the list of over-praised and over-used remedies, at least in their relations to neurasthenia. There is a fashion for phosphates just now, and when men become neurasthenic, they think they are on the road to health if they take some of the phosphates or phosphites. Now, these phosphates and phosphoruses and phosphites are good remedies in nervous troubles; but if they had anything like the specific power claimed for them, there would be little need for treating these cases; most of the patients that I see, have taken them in abundance.[1] All these stock remedies have a certain power which, in very many cases, they soon expend —they reach the limit of effect, beyond which they cannot be forced.

Koumiss.—Another new remedy, or comparatively new to this country, is *koumiss*—fermented milk. The power of this remedy to produce sleep is very great, and very satisfactory. It is a means of nourishing the body, without disturbing or even using the stomach to any very great degree. Koumiss is really digested milk, and is absorbed and taken up into the system without any strain upon the digestive apparatus. My friend, Dr. Brush, who has given attention to the study of this subject, tells me that from experiments which he made some time since, it was pretty clearly proved that the alcohol which the koumiss contains was used up in the system and not eliminated. I am persuaded that the use of koumiss in the

[1] Dr. Robert T. Edes, of Boston, has lately published, in the "Boston Medical and Surgical Journal" (January 15th, 1880), a very common-sense essay on this subject.

future is to be very widely extended, for all conditions where nutrition is difficult—not only in adults, but in children. The one disadvantage of koumiss, in some cases—that it constipates the bowels—is to be met by laxatives.

External Modes of Treatment.—A feature in the therapeutics of all chronic nervous disorders is the roll assigned to external applications of various kinds. Among the more prominent of these are electricity, water, massage, and counter-irritation—all of which, by virtue of their alterative or changing action, may be to produce sedative and tonic effects.

These are all old remedies: they have been crowned by the approving experience of many generations; but only recently can they be said to have been formally introduced into science, and made a part of the systematic therapeutics of scholarly physicians.

The chief of these four modes of treatment is undoubtedly electricity, which, with a rapidity that has perhaps no parallel, considering the difficulties in the way of its use and the prejudices against it, has forced its way into science.

Electricity is now regarded as a mode of motion—analogous to and correlated to the other great forces, as light, heat, and capable of being transformed into them. When an electric current passes through the body, it causes a molecular disturbance—a change, an alteration, by which the nutrition is modified, and consequently pain relieved and strength imparted. It is not the electricity remaining in the body that accomplishes this, but the *results* of the passage of electricity through the body; the effect of the molecular motion on nutrition, the modification of the vital processes, through the disturbances excited by the vibrations that give rise to what we call electricity. The antique fluid

theories of electricity are powerless to explain, even in a general way, the rationale of its action in disease. Applied to the body, electricity acts both directly and reflexly—directly on the part to which the application is made; indirectly through the reflex function of the nerves.

The galvanic belts, so much advertised, are of no value in nervous exhaustion.

In the treatment of neurasthenia, the best methods of using electricity are general faradization and central galvanization, but if there be special or local disorder, as prostatic or ovarian irritation, then local faradization and galvanization are also required.

In the treatment of a new case, and until we have learned the temperament of the patient, and the way he responds to electricity, it is proper always to employ mild currents, and for the same reason that it is always best to begin with a minimum dose of any remedy. But, when necessary, it is also well to test the full physiological effects of the remedy before giving up a case. I am convinced that in many cases electricity will not give extraordinary effects until we have produced the physiological effects upon the patient. To begin treatment with the excitation of these symptoms is unwise as a rule; very many persons are over-galvanized and over-faradized. Every case in this respect must be itself a study. I formerly believed that an application once a day was, to say the least, enough; but I now know from experience that applications twice a day, and, in some cases, applications quite prolonged, are advantageous.

Many years ago, I pointed out the fact that there are certain temperaments that do not bear electricity, or bear it very badly, and must be treated with mild currents, and with quite long intervals between the ap-

plications. Any new cases that come under our care may, for all we know, have this temperament. These propositions apply to all the other remedies of which I am to speak.[1]

In regard to this general question of dosage of electricity and adaptation to temperament, disease, and idiosyncrasy, I may observe that the dosage of this agent, as of some of our most used drugs, has been modified of late in a very interesting way. It has been proved by trial that the difference in effect between a large and even an average dose and a very small dose is great and radical; and that in different doses the same remedy may be used in very different diseases; thus the domain of therapeutics has been greatly widened. Tincture of cantharides, which in doses of ten or twenty drops causes irritation of the urethra and perhaps strangury, in doses of one drop or less is one of the best of all sedatives for irritation of the prostatic urethra and the neck of the bladder; aloes, which is a long known irritant for the lower bowel, has been successfully used in drop doses for prolapsus ani; arsenic, which is so liable, even in moderate doses, to produce inflammation of the stomach, in doses of one or two drops, or perhaps half a drop of Fowler's solution, sometimes acts with specific and most remarkable power on the irritated and inflamed mucous membrane of the stomach. Podophyllin, which in ordinary doses is so strongly cathartic, Dr. Mays has found, in half-drop doses of the fluid extract, to be very excellent in infantile diarrhœa. Calomel, when given in

[1] For more details of this branch of therapeutics the reader is referred to "A Practical Treatise on the Medical and Surgical Uses of Electricity," by Geo. M. Beard, A.M., M.D., and A. D. Rockwell, A.M., M.D. Sixth Edition, revised by A. D. Rockwell, A.M., M.D. Wm. Wood & Co., Publishers, N. Y.

immense doses of from 20 grains to half a drachm and even a teaspoonful (as Dr. Lente tells me is customary in some parts of the South), is said to have a local sedative effect, with no more cathartic effect than it will produce by a very small dose.

The difference between a dose of ten or twenty grains, and of one or two drachms of bromide of potassium, or of any of the bromides, not only in epilepsy, but also in a very large variety of functional nervous diseases, is all the difference between getting no effect at all, and getting some of the most remarkable therapeutic effects in the history of medicine.

Similarly, iodide of potassium in syphilis must be given by ounces; likewise with muriate of ammonia, in certain chest affections. In the southern portions of the United States, quinine must be given by the half-drachm, or even by the drachm, to break up chills and fever. Ergot, in the old-fashioned dose of ten or twelve drops of fluid extract, does little good in nervous affections; but given by the teaspoonful and two teaspoonfuls of fluid extract, or in five or ten grains of the ergotine, is one of the greatest and most successful of all the remedies of neuro-therapeutics. Sulphide of calcium, until very lately given in doses of a tenth of a grain, for various uses, we are now wont to give in doses of from one-half to two grains, for diabetes and other affections, without injurious effect, but with beneficial effects that small doses did not even suggest.

Strychnine, not only in paralysis, but in other nervous troubles, is, in many cases, never felt at all, until it is pushed to a dose far transcending the dose ordered in the books, or until there is severe twitching of the muscles, with head-symptoms.

What is true of these familiar drugs is even more

directly and demonstrably true of electricity. The scientific study of the dosage of electricity widens the range of its use in therapeutics, and at the same time makes our electro-therapeutics more precise and satisfactory.

[In the treatment of the central nervous system by the galvanic current it is essential that the dosage be accurately measured and carefully registered.

For this purpose the milliampèremeter is a necessity. This instrument of precision has been used in electro-therapeutics only a comparatively short time, but it is of immense value. It relieves the mind of all anxiety in regard to many minor details, and he who has once tested it will never willingly be without it. To the tyro it is a necessity.

Without it he will find himself working entirely in the dark, and a beginner should no more think of attempting serious work without his indicator of current-strength, than he should administer his drugs without his apothecary's measure. Another appliance convenient to have, but in no sense essential, is the rheostat, the utility of which I will briefly illustrate. To-day, for example, the observer notices that the current from a given number of cells is painfully felt by the patient, while to-morrow the same strength applied to the same patient may be felt but slightly. If no milliampèremeter is used, the mystery seems very great, and I know not how many times I have been asked for an explanation.

If, however, the current is measured the mystery is solved, for it is observed that when pain follows the application a greater number of milliampères is registered than when no pain is produced.

All this is explained by the fact that the skin varies

very much on different days and in different physical conditions as to its conductibility.

Now if on one day, in an application to a patient of a current from thirty cells, the meter registers thirty milliampères, and on the next the same number of cells, with the electrodes applied on the same portion of the body, causes the meter to indicate but twenty, we know that the patient is offering a far greater resistance to the current on the second day than on the first. It is not essential, for practical purposes, that we know just what that resistance is, but it is desirable and interesting to know, and the rheostat supplies this knowledge with absolute exactness. In order to find out the resistance when the registration is thirty, we substitute a rheostat for the body of the patient and introduce a number of ohms in the circuit sufficient to hold the needle at thirty. If the number of ohms found necessary is three thousand, then three thousand is exactly the resistance offered by the body of the patient on the first day. To find out the resistance when the meter registers but twenty, the same process is repeated, and if the number of ohms registered is five thousand, we know that five thousand ohms is the amount of resistance offered.

The utility of the rheostat in therapeutics is more especially in the direction of enabling us to increase or decrease the current gradually, and without shock, and in neurasthenic cases this is of especial consequence. After intercalating a resistance of one thousand or more ohms we bring into action the number of cells that will probably be required. By gradually reducing the resistance in the rheostat, the milliampèremeter soon marks the degree of quantity required. To decrease the current, the resistance in the rheostat is as gradually increased until the needle points to 0,

an indication that the resistance equals the strength of the current. The Germans taught the use of ridiculously weak currents, and, influenced by these teachings and by a natural respect for an agent so subtle, the average degree of strength employed when first I began the use of galvanism, and for years subsequently, indeed, was in many cases entirely inadequate. In the applications to the head ten or twelve cells were, as a rule, considered quite sufficient. Beneficial results were often seen to follow such mild treatment, it is true, and it was seldom that more was attempted, but that the dose of electricity thus obtained was exceedingly slight, and far more inefficient than was then supposed, can be readily demonstrated. The cephalic electrode was a broad, thick sponge, while the other, applied generally to the pit of the stomach, was of sponge also, but much smaller. The resistance thus offered is necessarily very great, and if the milliampèremeter is used, it will be found that the actual quantity of electricity passing through the body of the patient hardly exceeds six or seven milliampères. Now, to use a current of only this strength in applications to the nerve-centres is, as a rule, little more than child's play, and I make this assertion in remembrance of the fact that I formerly advocated the efficiency of currents even milder than this. Sometimes benefit may undoubtedly accrue from these very mild applications, but I have for so long a time observed the effects of a bolder line of treatment that I have no hesitancy in advocating it in preference to former methods.

In place of a current strength of five or six milliampéres, substitute one of twenty, and the superiority of results will soon become manifest. But if, by the method in common use, ten ordinary cells, in the

treatment of the head, deflect the needle but about six degrees, it would take some fifty cells to give a strength of thirty milliampères, and few physicians have any such number at command as that. For this purpose the electrodes should be as large as possible—that is —broad, and flat or curved according to the part of the body to which they are applied, but with little bulk.

With electrodes such as these and a series of twenty Leclanché cells, a current of thirty or more milliampères can readily be obtained in applications from the head to the solar plexus. Forty cells would therefore give sixty milliampères, an intensity of current seldom necessary to give in central galvanization.

In making these strong applications to the brain there is an element of danger which cannot be emphasized too strongly, and that is, the possibility and, indeed, the probability, considering the utterly haphazard way in which electricity is too frequently used, of the current becoming suddenly broken

Even with very weak currents applied to sensitive nerves, or to the head, interruptions are as a rule undesirable, and when strong, as indicated by a deflection of the needle of twenty or more, they may painfully aggravate the very symptoms that you are endeavoring to allay.

We cannot approximate the relative dose of electricity for different ages as accurately as we can that of drugs. This observation, however, will be found to be uniformly correct: The very young bear proportionately very much stronger currents than adults. A child of three, who should, according to rule, tolerate only about one-fifth the adult dose of any powerful drug, will easily bear one-third the adult dose of electricity.

Old people bear stronger currents than those in middle life; it is, indeed, quite astonishing to observe the

very marked insusceptibility of some very old people to electricity, due in some measure, perhaps, to blunted sensibility, but in a higher degree to a loss of conductibility of the tissues, and especially the skin. It will not answer, however, to presume too much in the application of electricity to the old on account of this

FIG. 1.

apparent insusceptibility, as it is not uncommon to meet with patients advanced in years who, while they may feel the application of a certain strength of current but little at the time, yet are exceedingly susceptible to its secondary effects.

I illustrate in Fig. 1 the process which has given me most satisfaction in the galvanic treatment of the

central nervous system, not only in neurasthenic cases, but in various other forms of nervous disease.

The hair being thoroughly wet, a light wire-gauze helmet, lined with some soft, conducting material, is fitted as accurately as possible to the head. To this is attached the positive pole, while the negative is applied to the pit of the stomach, and a current passed varying according to the disease and individual idiosyncrasies from five to fifty milliampères.

It may seem an easy thing to make use of central galvanization satisfactorily, but, like most easy things, its efficient use demands knowledge, care, and some experience, all of which are within easy reach of those who desire to utilize the method. The wide area which this helmet-electrode covers lessens by just so much the resistance to be overcome, and enables us to pass through the head a current of many milliampères, without pain or other ill results. To this end, however, the electrode must be made to adjust itself accurately to every inequality of surface, otherwise a painful concentration of current will be felt at various points, and the efficacy of the applications interfered with.]

Massage.—An excellent, though not indispensable aid to the treatment of neurasthenia in women who are bedridden, or who are kept in bed for a time, is massage or systematized rubbing and manipulation. This is performed in four general ways. The ordinary and popular method of rubbing down patients is not massage, nor any approximation to it, and will not produce the effect of massage.

1st. Simply pinching the skin.—This can be done thoroughly over the extremities and trunk. It is not, to the majority of patients, a painful process; but, like

all the operations of this nature, it may be at first somewhat disagreeable to the hysterical and hyperæsthetic. By a little practice it soon becomes positively agreeable.

2d. Pinching the muscles.—This is done with both hands, which grasp deeply and seize as much as possible of the muscular tissues. On the bowels this mode is excellently adapted for dyspepsia, constipation, and liver disorders.

3d. Tapping and beating or percussion.—The body may be gentle hammered with a pleximeter, or with the fingers, or with the whole hand. Various instrumental devices are employed for this purpose.[1] When this hammering is properly done, it sends vibrations at a distance from the point touched; not only does it stimulate the skin and the muscles directly beneath the hands or fingers, but the most remote parts of the body receive the transmitted impression, both directly and reflexly. This part of the process is usually very grateful to patients.

4th. Passive movements of the joints.—All the joints, great and small, from the fingers to the shoulder and hip, are removed backward and forward, and rotated, each a number of times. In paralysis, this process has long been popular and rightly so, for better than almost any other treatment, it tends to

[1] Of these devices, Dr. Graham thus remarks: "Percussion can be performed in half a dozen different ways with the hands and fingers, varying in force and rapidity. I have recently had two india-rubber air-balls, securely fastened on the ends of whalebone handles, for this purpose. Balls two inches in diameter and handles eleven inches long, are most suitable. They work most admirably, as one gets the spring of the whalebone with the rebound of the balls, thus gaining great rapidity of motion, with easily varying intensity. It takes considerable practice to become expert in using them."

prevent the stiffness and immovability that so often follow neglected paralysis. But in these functional nervous affections, signal benefit can also be derived from this manipulation.

The effects of massage, when carried out in the manner above described, are much like the now well-known effects of general faradization, namely: quickening and equalization of the circulation, general sedation and disposition to sleep, and relief of pain and of the indefinable nervousness that is so often worse than absolute pain.

The science and art of massage is worthy of more study than it has yet received; the popular process of gently superficially rubbing the body, frequently with all the clothes on, is no substitute for genuine massage, any more than the old habit of playing with the battery can take the place of systematic and skillful use of the various applications of electricity. There are those who think they have tried electricity when they have only held the poles of a common faradic machine in the hands; just so there are those who think they have tried massage when they have only been rubbed down like a horse, though probably with less care.

The operation of massage may take all the way from fifteen minutes to half an hour, or even an hour. It may be used daily or every other day, either alone or in connection with electrical treatment, or in alternation with it. Patients, after becoming accustomed to it, do not dread the hour when it is to be used; but are so pleased with its sedative tonic effects that they ask for and anticipate it. Massage is especially fitted for those who, on account of myelasthenia, or exhaustion of the spinal cord, are unable to take, without

fatigue, any considerable amount of active muscular exercise.[1]

"About seven years ago Dr. Mezger treated the then Danish crown prince successfully for a chronic joint malady by means of massage, which he used in a manner original to himself, and in accordance with the teachings of physiology and pathological anatomy. When the prince got well, he sent a young physician to Amsterdam to study Dr. Mezger's method of applying it, and soon after, many old as well as young physicians visited the clinic of Mezger, and they all agreed that the so-called massage, used in Mezger's manner, and according to the indications which a very large experience has enable him to point out, is a most worthy agent in various affections of the joints, besides in inflammations and neuroses. They consider that credit is due to Mezger for having improved massage in a physiological manner, and for having brought it to be acknowledged as a highly valuable method.

A few extracts from the very excellent and comprehensive report on massage, in *Schmidt's Jahrbücher*, Vol. 166, 1875, will show the estimation in which it is held by some of the first German physicians. The reporter begins by saying that "it is but recently that massage has gained an extensive scientific consideration, for it has passed out of the hands of rough empirics, into those of scientific, cultivated physicians; and, upon the ground of the results of recent scientific

[1] Dr. Douglas Graham, of Boston, has published a very interesting pamphlet on "The History of Massage," from which it appears that massage really dates back to Hippocrates and Celsus, and was first made scientific by Ling, of Sweden, in 1813. Within a few years interest in the subject has been revived by the efforts of Dr. Mezger, of Amsterdam.

investigations, it has been cultivated into an improved therapeutical system. The Danish physician, Mezger, has won the merit of having made massage in its entirety a special branch of the art of medicine." Then follows a list of forty articles on massage, by a score of authors, mostly Scandinavian, only one being American. The manner of using massage and its physiological action are next described; and, after this, the results of massage in similar cases, treated by different authors, are grouped and compared—so many cured, so many benefited, and so many not relieved. The report concludes by saying that, "if massage is to be of any use, it ought to be applied by those who are absolutely physicians; for the brilliant results which have just been cited depended upon an exact knowledge of anatomy and physiology, and also upon recent progress in medical and surgical pathology, which enabled the operators to make an accurate diagnosis. A very important part of the qualifications necessary for the effectual performance of massage depends upon the physical qualities of the manipulators; they require strength of hands and fingers, endurance and elasticity, which every physician does not possess; and herein lies the danger that the practice of massage will pass into the hands of the laity, who, again, have not the other requisites, viz., medical knowledge"[1] (Graham).

Lomi-Lomi.—My friend Dr. N. B. Emerson, a native

[1] Prof. Von. Mosengeil, of Bonn, speaking of massage, says: "Its value must be recognized; but it is not adapted for every-day use by every physician; nor will it be much used in hospitals, for lack of time. The best results will be obtained by the few who bring to its use abundance of time, patience, skill and strength. Specialists, therefore, will probably get the most satisfactory results from it. ("Arch. f. klin. Chirurg.," XIX.,4, 1876.) —(Graham.)

of the Sandwich Islands, published in *Appleton's Journal*, October, 1870, a very interesting article on *lomi-lomi*. He states that there are two kinds of lomi-lomi, which is their form of massage. He says that it is divided into two kinds, general and special; that is, general for the whole body, and special for certain parts, and is usually performed by elderly and experienced women. It consists in kneading, squeezing, and rubbing; and in degree may vary from the tenderest caress to the severest grip.

To perform this operation, or to have it performed for one, is one of the highest compliments a host can pay to a guest. Usually, severe pain is avoided, although at first the operation may be somewhat painful; but it becomes, in time, exceedingly agreeable. In some cases, the natives lie down, and allow children to walk over them.

The Sandwich Islanders are great swimmers, as we all know; and when one of them becomes weary, while swimming, the others rub him thoroughly while in the water.

Dr. Emerson suggests that perhaps the superior physique of the better class of Sandwich Islanders may be in part due to the frequent use of this lomi-lomi, which is substantially what we mean by massage, as that term is now used in science.

General faradization, when properly and thoroughly performed over the whole body, or even over the trunk alone, really unites the advantages of massage in a considerable degree with the advantage of electricity. In the practice of many physicians general faradization is carried out in such a way that it becomes but a series of local faradizations; this method is more unpleasant for the patient and far less satisfactory in all respects than its thorough employment as directed in

our original writings on the subject. As I now use this method in many cases, very slight undressing of the patient is needed.

Hydro-Therapeutics.—At the present time, the method of treatment by douches to the spine and back of the neck is growing in favor. In Paris, as I saw at the water-cure establishment, a very fine spray is used, sent with such force that the water, though cold, appeared to be hot, and could be borne by the hand only for a few moments. This, applied to the spine, is a very powerful means of counter-irritation. The application also of compresses, cold or hot, and of wet sheets, with dry ones wrapped over, when properly applied and guided with special reference to the needs of each case, are, likewise, of the highest service. Sometimes, compresses of wet cloths wrung out, and *thick dry ones around them*, applied to the stomach and liver and genitals, and kept for some time, are most excellent means of relief.

This mode of treatment has, however, been overrated, for, valuable as it is, it cannot and does not alone cure neurasthenia; many of my cases have tried it, in some instances, for years. Water treatment, like all other excellent means of treatment, has been greatly misused. If used at all for nervous exhaustion. it must not be in the old, but in the new style, adapted to the modern constitution, and all cases cannot be treated in the same way.

Turkish and Russian Baths.—The now popular Turkish and Russian baths are among the auxiliary means of relief for these cases that can be recommended; but they cannot be indiscriminately recommended, and they cannot be expected to cure the majority of cases, particularly those of long standing.

In a very considerable number of instances, they

seem to do harm. One trouble is, that these baths are overused; patients stay too long in the hot room. These baths, like other hygienic measures, must be adapted to the temperament, the constitution, the stage of the disease, far more than they are now, in order to make them of general use for neurasthenic sufferers. I continually see patients who have tried them and who have been injured, the fault being not so much in the principle of the baths as in the way in which they are used or abused. I am never willing to have a very nervous patient take these baths unless they are closely watched to see that they do not remain in too long and become exhausted.

Heat and Cold.—The local applications of both heat and cold are very valuable in some phases of neurasthenia. The ice bags and the hot-water bags are useful in applications to the spine and to any painful part. In some cases a cold, in others a warm application seems to be most satisfactory. Bags of ice, or ice wrapped in a towel, applied to the back of the neck and to the vortex are means of relief and excellent adjuvants to the prolonged treatment of these cases. With these, as with all remedies, there is danger of over-use. Cold, in the form of ice especially, may be applied too long. When used on delicate females, this should be watched with care.

Alternations of heat and cold—heat for a moment, then cold for a moment—are excellent means of local treatment.

Laxatives and Cathartics.—A very old method of treatment is by cathartics. This routine plan of combating diseases, especially those chronic diseases associated with debility, is at present so unpopular that one needs to pray for courage before attempting to revive it. I am, however, convinced from positive

experience—complicated, I admit, with the sources of error that attend all of our therapeutical experiments —that in many cases of neurasthenia and allied disorders it is wise to begin the treatment, whatever it may be, by acting upon the bowels by some cathartic medicine; and to repeat this procedure at intervals during a course of other medication. Of themselves alone, unaided by sedatives or tonics, they would rarely, if ever, cure a case of neurasthenia; indeed, there are cases where they cannot be used at all. The philosophy of active catharsis is somewhat complex, the freeing of the bowels and the unloading of the liver being not always or necessarily the most important. Cathartics act by counter-irritation; they irritate the lining membrane of the intestines as truly as a fly-plaster does the back, and the benefit that follows their use must be in part the reflex results of this irritation.

One reason for the present unpopularity of certain old methods of treatment, as laxatives, cathartics, and counter-irritation of various kinds, is that they have not been adapted to the modern constitution, which will not bear and does not need such large quantities of medicine, or as vigorous treatment or hygiene, as the ancient constitution. Physicians forget that whatever the remedy used, it should be fitted to the civilized constitution as it appears in this latter part of the nineteenth century. Various remedies used by our fathers with satisfaction and success are as good now as they ever were, provided they are used less vigorously and violently. It is as unscientific to give children the same doses that are given to adults, as to treat the nervously exhausted sufferers of the present time, and especially in this country, just as our fathers were treated. Laxatives and purges are as valuable

as they were one hundred years ago, if they be rightly used, that is, modified to the greater nerve sensitiveness of our generation.

In treating neurasthenic conditions by cathartics or laxatives, these two principles are to be borne in mind:

First. That the dose should be small, just sufficient to cause one, or but few discharges with slight pain, or none at all.

Secondly. To keep up their action by intervals for a considerable time.

A prescription that I often use but variously modify, according to individual peculiarities, is the following euonymin compound:

Euonymin . . . . . 0.06 grams
Hydrastis,
Aloes Socot.,
Hyoscyamus,
Podophyllin . . . . . āā 0.03 grams

For one pill. Dose one, two, or three, according to the susceptibility of the patient.

Counter-irritation, when intelligently and judiciously used, with proper modification to the peculiarities of the modern constitution and to individual idiosyncrasy, is as good a remedy for disease as it ever was; and all the progress that has been made during the past half century has not displaced, and no immediate progress in the future threatens to displace it in the treatment of many forms of nervous disease.

The prejudice in the popular mind against counter-irritation has the same basis as the prejudice against the use of electricity, or calomel, or water—namely, that it is so good that it has been over-used and abused; hence, the reaction against this mode of treating disease. It is because calomel, and bleeding, and

electricity, and opium, and alcohol, and counter-irritation were so successful in so large a variety of cases that they have been so much prescribed; the positive and satisfactory results obtained from these remedies tempted physicians to depend exclusively upon them, to the neglect of other, and as we now know, equally valuable remedies.

For neurasthenia and allied disorders, counter-irritation alone is of the highest service, and can be used without causing severe pain, or even discomfort.

Small Blisters.—One of the most convenient and successful methods of counter-irritating in functional nervous maladies is by small blisters, frequently repeated; whenever the symptom of tenderness in any part of the spine appears, whatever accompanying symptoms there may be, a succession of blisters so small as to cause little or no annoyance, is always indicated, and will be sure to help the patient, even though various other medication is used at the same time; indeed, it is one of the advantages of counter-irritation, that it can be used in conjunction with any or all other forms of treatment. A blister composed of a strip of rubber adhesive plaster, and covered in the centre with a very small quantity of cantharides ointment, will stay where it is put, and will not cause distress. For application to the spine, a plaster of one inch in length and half an inch in breadth is usually sufficient, and its comparative painlessness will surprise those who are wont to submit to the enormous blisters that were formerly used. Indeed, one of the great practical difficulties in the recommendations of blisters to patients is the remembrance of what they have suffered, or seen others suffer, from the fearfully large applications that were formerly prescribed in various diseases. This prejudice can be removed by

stating the facts, and by explaining that blisters, like all other modes of treatment, can be adapted to the modern constitution, and to functional nervous disease; and that when used in this way, they are not objects of dread, but, after a fair trial, will be eagerly sought after on account of the delightful relief they afford.

In regard to the use of blisters as here recommended, patients and physicians should be disabused of two errors:

1. That they relieve and cure by virtue of their depleting effect. The quantity of serum that is abstracted by one of these small blisters is very trifling, and in no way proportioned to the good they accomplish.

These blisters act reflexly through the local irritation that they excite, analogously to the actual cautery.

If the object were the local abstraction of blood, it would be much better to use wet cupping or the artificial leech.

2. To get permanent effects from them, they should be many times repeated; a single application gives but transient relief, grateful and satisfactory as that may be. Patients, and even physicians, often suppose that the philosophy of blistering is to draw out as much blood or serum as possible, and by a single and severe application, which generally is not to be repeated.

In acute inflammatory diseases, this principle may come in, but not in the conditions we are describing.

Hence the necessity of making the blisters so small as to be of the least possible annoyance to the delicate and nervous sufferer, who already has distress enough to endure.

The blisters used in these functional disorders should not only be short and narrow, but should be placed perpendicular to the spine rather than across it, thus interfering as little as possible with the movements of the muscles of the back. Thus prepared and applied, they do not, as a rule, need to be dressed at all; they can be kept on until they dry up and fall off themselves, when another can be safely put on in the same place. The relief which they give is not usually felt until they begin to itch; indeed, for the first day or two, patients sometimes declare that they aggravate the symptoms.

3. To depend on them alone for the cure. They are adjuvants only to constitutional treatment, and in many cases they are not indicated at all. I should never think of treating a case by blisters only or mainly. They are but part of the team that is to draw the load.

The peculiarities of my mode of blistering, then, are these four:

1. The use of a very small surface—very much smaller than has usually been recommended or employed.

2. The use of a very small quantity of cantharides ointment. This I scatter at points on the blister. The blisters sold in shops do not serve my purpose. They are too strong; they cause the plaster to rise up over the blister and fall off, which is precisely what is not wanted. I always prepare my blister plasters myself; I never prescribe them; for if I do, I do not get satisfaction. The patients are irritated, annoyed, and get a prejudice against the blisters which tends to discourage them, and they do not get the results; they cannot get the results by the blisters that are made in the shops unless they are made over again or modified for this special purpose.

3. The retention of the blister for several days, or until it falls off. By this means irritation is kept up which, properly managed, is not annoying even to the sensitive girl, and which brings a relief, both more grateful and incomparably more permanent than the accepted method of using blisters.

4. Repetition from time to time with a view to permanent effects. If large blisters were used, the patients would not bear this; and it is well that they should not, for they would be likely to be injured more than benefited by such severe treatment.

Mild Cautery.—Another very old remedy, but as good as it is old, where it is properly used, is the *actual or galvano-cautery.*

There is among the people, and even in the profession, a prevalent notion that the application of the actual cautery is a very painful procedure. This false idea has been fostered with the public on account of the supposed sufferings of certain prominent persons, like Charles Sumner, and Clara Morris the actress, from this treatment. The lectures of Brown-Séquard, referring to this subject, assisted in confirming this impression, and the newspaper accounts, in every possible way, have stimulated and strengthened the belief that it requires the courage of a hero to submit without etherization to the operations of the actual cautery. The real scientific truth on this matter is, that the cautery, as it can be used with modern appliances, as the galvano-cautery or Paquelin's apparatus, and is used by those who understand it, is not specially painful, even to the most delicate woman. The pain is in the idea of the thing—in the expectation, and not in burning. Any one who has had a sensitive tooth filled has suffered ten times more than one who has submitted to a cautery operation, if properly performed. I

speak of this point particularly, because the mild cautery is an agent of such great therapeutic power. This mode of treatment, like the blisters already referred to, must be, and now can be, modified and adapted to the sensitive modern constitution. It is one of the great remedies that stands the test of time and large experience.

Everything depends on the way in which the cautery is applied. It can be used in such a way as to cause scarcely any pain or annoyance; so that those who have had one application are willing and glad to have succeeding applications, and ask for them as people would ask for an application of electricity, or a dose of massage. I am convinced, from my own experience, that the occasional use, or in some cases, perhaps, the frequent use of a *very mild* cautery indeed —so mild as not to be annoying to the most sensitive girl—is far more efficacious than the usual method of administering this remedy.

This is, indeed, in harmony with the method of blistering above described. In cases, not a few, the application of a strong cautery is followed by a depression which lasts for a day or two. This depression is not always a bad sign; it occurs in those who are greatly, very greatly benefited by the cautery; but in some cases it is discouraging to the patient, and indicates that the cautery has been used too often, or too severely. In all cases, this depression, as well as the pain, can be avoided by a proper arrangement of the dosage of the cautery.

The slight scars made by any counter-irritants to cases of this kind quickly heal, and even the stains soon disappear as a rule; for it is a peculiarity of neurasthenic constitutions that wounds heal quickly—more quickly, as I judge, than in the average consti-

tution. In some cases, the irritation heals altogether too quickly, so that it is necessary to repeat it quite frequently. As I understand it, these wounds heal quickly in these persons, for the same reason that they do not have inflammations, or are not liable to febrile diseases.

Metalloscopy or Metal Therapeutics.—While in Paris. Charcot gave me every opportunity to observe all his experiments, not only in the department of metalloscopy, but in trance, and the conclusions which I have reached from the observations then and there made, and from my own experiments, and from the literature of the subject, are as follows:

1. Results far more interesting and informing, both in a physiological and in a therapeutical sense, have been obtained where the experiments were made in such a way as to make it absolutely certain that the only factor in producing the results was merely *subjective*—the mind of the patient acting upon the body. It is also established that, under any influence or mode of treatment calculated to act on the emotions in any way, it is difficult to exclude this subjective element of error, which comes from the mind of the patient operated upon.

In my own experiments in mental therapeutics, thus far published only in abstract, I have established the following:

First. By turning the mind of the patient on his body, through any process whatever, as by stating the precise hour when recovery will take place, by applying metals *outside* of the clothing, etc., it is possible to cure permanently, as well as very rapidly, and in some cases instantaneously, cases of long-standing functional nervous disease.

Second. Even *organic* structural disease may, in the

same way, be relieved temporarily more speedily and satisfactorily than by any of our objective medication.

In any physiological or therapeutic experiments or measures, like the application of metals or magnets, or any very imposing proceedings that strike the emotions of ignorant or hysterical women, the presumption is, thousands to one, that the result, whatever that may be, is *subjective* and not objective, and this presumption must be overthrown before such experiments can be received as science.

2. On the other hand, the recent discoveries and inventions, of which the telephone, the phonograph, the audiometer, and the microphone are types and representatives, have proved that great results can come from changes in matter very minute and far out of the range of the senses. It is also well known that a magnet can stop a watch, elongate an iron rod, and make music in it. These results so far are in favor of the claims of Burq, Charcot, and others in regard to metals, magnets, and solenoids. Admitting that the results of some of these experiments are absolutely proved to be *objective*, there would be no difficulty in giving at least a general explanation on the basis of the now established facts of physics and electro-physics. These hysterical and hystero-epileptic cases are exceedingly susceptible, and a very slight force, subjective, or objective, will affect them.

3. The first presumption—that the results are *subjective*—can be overcome only by a series of experiments on different patients, under different circumstances, and at different times, in which all the *six* sources of error that apply to all the experiments with living human beings have been carefully eliminated. The six sources of error are as follows:—1. Unconscious deception on the part of the subject experimented

on; 2. Intentional deception on the part of the subject experimented on; 3. Intentional collusion of other parties; 4. Unintentional collusion of other parties; 5. Chances and coincidences; and, 6. Phenomena of involuntary life, the mind of the subject operating on the body and producing results. To eliminate these errors, the subject experimented on must be *deceived*.

4. The reports of experiments made by Burq and Charcot, as they were *first* made, and the replies to criticisms upon them, contained no evidences whatever that these sources of error had been eliminated. It is right, and scientific, and necessary, therefore, that we should assume that the presumption that the results were subjective had not been overcome. I have nothing to recall or modify of my criticisms on these experiments in my pamphlet on that subject.[1]

5. There is, however, *now* evidence of an important character that more recent experiments of Charcot and several others have been made in such a way as to eliminate these sources of error; and if the statements of Charcot made to me are accepted, results have been obtained which, some of the time at least, are objective, and we have so far obtained an addition to physiological science. Similar results as those reported by Charcot in hysterical conditions have been obtained by Dr. McCall Anderson, of Glasgow, and, according to his own report, the elements of error were properly eliminated by the use of *false* magnets. When he used false magnets no effects followed; Charcot says the same. More recently still, Dr. Franz Müller, of Gratz, Germany, has published in the *Berliner Klinische Wockenschrift*, No. 28, 1879, a paper entitled

[1] I have formulated and discussed these six sources of error in detail in my papers on "Experiments with Living Human Beings." "Popular Science Monthly," March and April, 1879.

Zur Metalloscopie und Magnetwirkung bei Hysterischen Lähmungen, wherein he confirms the claims of Burq and Charcot in regard both to the action of metals and magnets. Müller, unlike most of the experimenters in this field, seems, according to his report, to be fully conscious of the six sources of error, though he does not formulate them, and makes his experiments accordingly. Such reports help to overcome the enormous presumption against these results being objective.

6. The subject has, therefore, reached a stage where it may properly receive the attention of experts in this department. It is an open question worthy of investigation, and waiting to be closed one way or the other. No experiments in this department are worth anything unless the subject is *all the time deceived*. The *public* exhibitions of Charcot prove nothing, for they make no allowance for all the six sources of error. Charcot, in conversation with me, declared that for the scientific study of the subject he depended on his private experiments.

These questions, however settled, have apparently a physiological more than a therapeutical interest. Charcot has abandoned metal therapeutics so-called, and regards his experiments merely as physiological curiosities. It is, however, not impossible that we shall find in these processes an addition of a certain value—perhaps of a greater value than is now apparent, for relieving hysteria, neurasthenia, and allied states.

Nitrous Oxide ("laughing gas") is recommended by Drs. Blake and Hamilton (*Med. Record*, Jan. 31st, 1880) as a stimulant in neurasthenia. Daily inhalations of not less than twenty gallons, well diluted with air, are required.

Philosophy of this Plan of Treatment.—Nerve-Alteratives.—Diseases of this character are liable to be relieved or cured by any mode of treatment, external or internal, medical or mechanical, that is capable of producing a *change in the constitution.*

In neurasthenia there is no new substance, no entity, no poison introduced into the system; there is simply bad nutrition—a poverty of nerve-force—and, we may suppose, instability and abnormal movements of the ultimate particles of the living matter.

Now anything that alters the nutrition, deflects these motions, giving them a different direction from what they already have, may exercise a relieving if not a curative effect. The old-fashioned term *alterative* was really scientific, so far as it went, and it goes, perhaps, about as far as, even now, we are able to go in our analysis of the *modus operandi* of very many of the remedies and systems of treatment that are to-day most esteemed. The observed fact that these maladies yield to so many different kinds and varieties of treatment is in general explained by this theory,—anything that changes may cure. Medicines and modes of treatment may change the constitution by their direct, local effect, by reflex action, and by special affinities that certain drugs have for certain parts or organs, or structures, or functions. Many of the remedies used in neurasthenia may be regarded as *nerve-alteratives.*

By this analysis we are able to obtain at least a general view of the *rationale* of the therapeutics of all chronic diseases, and of the oftentimes puzzling fact that the same remedies act so differently with the same person at different times, and also with different constitutions, and at different periods of life.

Local Treatment.—In quite a number of cases of

neurasthenia, no satisfactory relief or cure can be obtained until we first relieve the local disease from which the general neurasthenia originated, and by which it is maintained. The irritations of the digestive and the reproductive apparatus are reflected to the brain, the spine, the eyes, the ears, and by them to the whole system. The disease in these parts, closely connected by many large plexuses of nerves through the whole system, reacts on the whole system and neutralizes, in a degree, the remedies that we employ in our constitutional treatment. In the diagnosis of neurasthenia, it is needful, as has been seen, to trace out these local disorders of special organs, in order to learn the cause and the complications of the special malady; and in our treatment it is also necessary, whatever constitutional relief may be employed, to remove these local difficulties. A long war has been going on between the advocates of constitutional and local treatment; but there should be no war between these methods; for the true science and art of medicine require a unison between the two—the one should supplement the other. To depend upon one to the exclusion of the other is short-sighted and unscientific, and the source of disappointments and failures innumerable.

Disorders of the stomach and liver may become foci that light up the whole system with disease, and demand, both on scientific and on practical grounds, a special local treatment at the same time with our constitutional treatment.

On this subject mistakes are made both ways—first, by using nothing but local treatment; and, secondly, by neglecting it entirely. In very many cases, all the general symptoms remain after the local disease is cured. The flames that have spread over the system

are not to be extinguished, though the sources from which they originated have burned up. In males self-abuse, especially when begun in early years, before or just after puberty, is one of the most frequent of the exciting causes of many of the local and also general symptoms of nervous exhaustion. In females, excessive child-bearing, the injuries that follow parturition, and uterine and ovarian congestions resulting from various causes, are often the starting-points of every conceivable phase of functional nervous disorders, from mild and transient neurasthenia through all the gradations to severe melancholia.

To neglect local treatment in cases with such a history is to neglect our patient. I see many failures of purely general treatment from this cause alone.

Persistence in Treatment.—Perseverance is an element which is required both on the part of the physician and of the patient. Diseases of many years standing are not to be driven from their strongholds by a single prescription, or by a brief and temporary respite from care. It is not necessary to abandon one's business or profession. One can keep right on with his daily duties in very many cases; but it is necessary to make the treatment in a measure a matter at once of conscience and of routine; as an incident to our profession or occupation, for weeks, and in some cases, months. It is not necessary to be taking medicine all this time, but it is necessary to be, so to speak, under arms—prepared to meet any symptoms as they may arise, and take medicine off and on as it may be convenient.

Very rarely indeed do I advise a patient to change his profession or occupation, whatever it may be, provided he is happy and successful in it. In a large number of cases I urge, especially upon young men,

the necessity of obtaining some occupation; and I would rather have them work too hard than not work at all.

In setting out on the voyage across the Atlantic, we are not on lookout for a sight of Fastnet Light the first day, but quietly resign ourselves to the care of the officers of the ship, meanwhile occupying and amusing ourselves as best we can. Just so the neurasthenic on the voyage toward health is not to be impatient for the end, nor expect to celebrate its completion in twenty-four hours, but should trust himself in the hands of his adviser who is to think and watch for him, while he himself obeys his commands and attends to his own concerns.

Treatment of Sequences.—The above plan of treatment applies not only to nervous exhaustion, both spinal and cerebral, but to many of the sequences of neurasthenia as described in Chapter IV.—melancholia, hysteria, hystero-epilepsy, inebriety, opiomania, and certain phases of professional cramp as well as albuminuria can be treated successfully in this way. Always, in all that we do for neurasthenia, it should be remembered that it is not the remedy that cures, but the physician who cures, making use of the remedy. It is the way in which these methods of treatment are used that determines the result. All these processes can be so used as to do harm, and all of them can be so used by a wise physician as to relieve and cure.

General and Special Effects of this Combined Treatment.—The powerful sedative and tonic effects of general faradization and central galvanization used by themselves have several times been explained in detail in my writings, and the claims therein made have been confirmed by many other observers, as Vater,

Benedict, and Erb in Germany, and Mitchell and many others in this country.

Under this combined treatment, medication, hygiene, massage, and electricity, these sedative and tonic effects are hastened, extended, and made more permanent; and cases that under any single and exclusive method would find but partial relief are entirely cured.

Improvement in Sleep.—As one of the most constant symptoms of neurasthenia is wakefulness, so one of the first signs of improvement—the earliest evidence that the treatment is doing the work designed—is sounder sleep and more of it; there is less of troubled dreaming, of nightmare, of restlessness, of tossing and pitching about, of positive unrest. The patient finds that he can give up his chloral and falls to sleep more readily and spends more hours in unconsciousness than before. This improvement in sleep appears sometimes during the first week of treatment, and even on the very first few nights.

The function of sleep is perhaps the best of all barometers of functional nervous disease; since nearly all cases of neurasthenia and allied disorders are accompanied by drowsiness or wakefulness, and the correcting of these conditions is a proof that the patient is on the mend. In organic nervous troubles, on the other hand, the sleep is often if not usually normal; in ataxy, in the various forms of chronic myelitis, in paralysis from grave cerebral disease, the patient may sleep as well as in perfect health. In some cases, the incipience of nervous disorder is marked by insomnia, while in the later and severer stages this symptom passes away. Sleep is itself food and medicine, and when it is restored, all the other functions share in the restoration. When a patient

is made to sleep without forcing measures we may know by that fact alone that he is improving.

[For the insomnia which is so frequently associated with neurasthenia I know of no remedy, taking the cases as we find them, that offers so much in the way of relief as electricity. General faradization is often of the utmost service, but in many cases where this and all other methods have failed to produce the desired result, the galvanic current properly applied proves rapidly efficacious. The remedy has in my hands acted so well, that I may be allowed in a few words to emphasize the matter. If a patient can be made to sleep without forcing measures, as has just been observed, so much the better, but too frequently the administration of some sleeping potion is for a time unavoidable. For the production of sleep, however, electricity is not a forcing measure in the sense that we use the term as applied to chloral, opium, and other internal remedies of their kind. If it produces sleep on one night and its application is omitted the next, the patient is none the worse because of its administration, but is on the contrary more inclined to restfulness on the second night, because of the previous treatment. The effects of electricity on the sleep of a neurasthenic patient, whether used in the form of general faradization, general franklinization, or galvanization of the central nervous system, are both temporary and permanent. The temporary relief that appears the night or two following an application, though usually less potent than those of bromide of potassium and hydrate of chloral, are yet very decided; but it is for the *permanent* relief that electrization is chiefly indicated in this symptom. This comes gradually, slowly, and as a result of the improvement of the morbid condition on which the insomnia depends.

In the treatment by the galvanic current, much depends upon the sufficiency of the treatment as regards strength of current and the care with which it is administered. An illustrative case is sometimes more impressive than a mere statement of fact, and the following case is therefore related not only as an example of the good effects of treatment but as descriptive of a method which has on the whole proven more efficacious for the permanent relief of insomnia than any other. A gentleman in the prime of life had for several years been a sufferer from many of the varied symptoms of neurasthenia, and finally from this cause alone resigned his partnership in an extensive and most profitable mercantile business. He travelled extensively and was treated in many cities, but without finding the relief that he sought for. Finally, insomnia of a most persistent type supervened, and for six months he never slept without the aid of either bromide or chloral, and even with these he had lately suffered many wakeful hours when he should have slept. He finally resolved of his own volition to abandon all soporifics. For ten days he faithfully kept this resolve, but no sleep came to him, and he was forced to resort once more to chloral. Shortly after he fell under my observation and was treated with the galvanic current accurately measured.

Placing a large metal electrode (covered with a smooth layer of absorbent cotton with a second covering of chamois skin) over the solar plexus, and a second large electrode of fine sponge over the cilio spinal centre, an ascending current was applied.

Beginning with a few cells the number was gradually increased without interruption until a current strength of sixty milliampères was reached and continued for eight or ten minutes.

The current was then as gradually decreased to zero. That night, without the administration of any internal remedy, the patient slept six hours, and the second night, after a second similar application, he slept soundly for seven hours. To detail further the history of this case would be simply a repetition. He was under observation for one month, receiving the same treatment nearly every day. At the end of that time he found it necessary to go abroad on matters of importance, but the improvement in sleep that had been gained remained permanent. I gave him letters of introduction to prominent parties in England, France and Germany, fully describing the case and my method of treatment, but he found it unnecessary to make use of them.]

Mental and Physical Sedation.—There is more of calmness, of repose, of serenity of feeling and manner; the patient finds it less difficult to sit or keep still without working or moving the limbs. He is less fretful and irritable. The abnormal tension and activity frequently observed in functional nervous maladies disappear, and while the capacity for work increases the ability to abstain from working without fretting or chafing also increases.

Increase in Fat and Weight of the Body.—Again and again have I seen the dyspeptic and the emaciated fill out under this regimen, even when they pursued their regular callings.

This gain of fat in a few weeks reaches its limit, beyond which it cannot be forced by any continuance or combination of the treatment, and it is not observed to the same degree in all cases, even of those that are perfectly cured.

On returning to active, normal life, some of this added flesh remains as a permanent possession, while some may gradually disappear.

Improvement in Appetite and Digestion.—Caprice of appetite and digestion almost always accompanies the varied forms of neurasthenia, and any treatment that relieves these symptoms is doubly grateful, in the direct comfort that it gives, and in the indirect effect on the nutrition of the body.

Even those that are confined to bed and allowed no active exercise find their digestion daily growing stronger; their capacity for taking and for assimilating large quantities of food astonishes themselves and their friends. After a time this improvement in appetite, like the increase in body weight, reaches its limit; less food is demanded, as though the system, long exhausted and badly nourished, had become, so to speak, saturated, or had been brought up to its normal state.

Relief of Special Symptoms of Weariness, Exhaustion, and Pain.—Neuralgia, headache, backache, cardialgia, pain in the eyes after using or on exposure to bright light, tinnitus, palpitation, vague, wandering distress in all parts of the frame, general or local tenderness, attacks of numbness and stiffness, spasms, twitchings, sensations of rolling, of beating, of burning, of pricking, of crawling, flashes of heat and cold, attacks of overwhelming exhaustion and depression, chilliness of the extremities—all these results of the neurasthenic state are modified more or less quickly after the above course of treatment is in full operation. In some instances relief of these various morbid sensations does not reach any degree of permanency until the patient has been for some time under care, although temporary relief or alleviation very often appears the first week of treatment.

Increased Capacity for Muscular and Cerebral Toil.—Patients who at the outset of this treatment are un-

able to walk a block or even across the room, who cannot concentrate the mind sufficiently to write a letter or read a newspaper, experience a gradual though not always a steady renewal of their powers; they find, after a period varying from several days to several weeks, that they can begin to return to their usual duties. The flabby and relaxed muscles acquire firmness, hardness and solidity; there is less of the wet-rag feeling so common in these cases.

Those who have been utterly disheartened, and have resigned the expectation of ever again taking part in active work of any kind, are more than restored, and are able, in some cases, to labor harder than before; the system seems to have been rested both by the disease and its treatment, just as after an attack of typhoid fever.

As work is itself, when well ordered, one of the means of cure of some forms of nervous exhaustion, the return of the power to work is itself a medicine which, in time, makes it possible to displace all other treatment.

Travelling as Medicine.—The fashionable method of treating all forms of functional nervous disease, is by recommending a trip to Europe. Even where no diagnosis is made, or where the vague expression "general debility" only is used to indicate the morbid condition, this prescription, "a trip to Europe," is hastily ordered.

For years it has been the custom, when the patients complained of any or of all of these symptoms that I have described under neurasthenia, to fall back on the recommendation of travel as a panacea, adapted alike to all stages and sexes. If we do not know what is the matter with the patient, we assume that his symptoms are imaginary, or if not imaginary, trifling, and

that they require no medicine, no special medical treatment, no careful medical observation, no well-directed hygiene even. A long vacation, a protracted absence, is supposed to be a specific for all such conditions. In some cases, this prescription does work most excellently; in other cases, its results are negative, and in other cases evil, and only evil results are obtained.

I have constantly under my care cases of both forms of neurasthenia, who have spent months and years abroad, under advice of physicians, not only without benefit, but in some instances have been positively injured. Cases of myelasthenia (spinal exhaustion) especially are very liable to be made worse by the fatigue of travel, by the discomfort of absence from home, by the laborious, and oftentimes wearisome and exhausting tasks of sight-seeing. Many are worn out in the picture galleries, and in mountain climbing, and must return home to rest and recover from the effects. Not unfrequently cases of this class progress more satisfactorily at home, when their minds are occupied with their favorite employment, even though sometimes they may be overtasked in it, and become at times over-wearied and excited. In the case of a prominent man that I now recall—cerebrasthenia complicated with myelasthenia—who spent a whole year abroad, and who consulted me on his return, it was found on resuming the topics in which he was especially interested, that he was much better than when idling his time in foreign lands.

Travelling, indeed, is no more a specific than any other medicine is a specific. Indiscriminately prescribed, especially without making a differential diagnosis of the case, it is unscientific. It is one of the best remedies; it may be one of the worst remedies; it

may be a specific for a certain case; it may be precisely the most injurious thing that can be suggested for another case. Almost all medicines are apt to be used indiscriminately, but I doubt whether there is any medicine which is more indiscriminately used than travel, especially in the form of a trip to Europe.

For the majority of cases, judicious treatment does more good than travel. Very often I am called upon to treat those who have travelled almost everywhere, seeking help and finding none. One month, or even one week of treatment will oftentimes do more for the relief of the worst neurasthenic symptoms, than a whole year of travel. One needs indeed a certain degree of health and nerve-force to travel with pleasure or advantage; as a supplement to treatment, sensible travel is often of the highest benefit.

Short Vacations.—In the cases that are supposed to be nervous prostration, the very best results are oftentimes accomplished, in both cerebrasthenia and myelasthenia, when the patient remains at home, or near at home, or at least in his own country, by short vacations. Trips that last for perhaps but two or three days, or even a single day, especially a change from city to country air, sometimes brings great relief. And oftentimes there is no need of breaking up business, or interfering with the plans of life.

Horse-back Riding.—Horse-back riding, like travel in Europe, is a remedy that has been most unscientifically recommended and used. Like travel, it may be one of the best or one of the worst of exercises, according to the temperament and special condition of the patient. In individual cases it is a specific for good; in other cases it is a specific for harm. I have seen patients whose maladies were brought on or made much worse by severe riding, kept up for a long

time; and I have seen cases where this mode of exercise seemed to do more than almost anything else in bringing about a cure.

Where there is any trouble with the prostatic urethra, riding horse-back is likely to do injury—to interfere with treatment, if not to neutralize it entirely. A number of physicians who have consulted me, have been clearly injured by their long rides in their country practice. Even where there is no local difficulty, the exercise of riding is far too severe for many nervous constitutions. Two members of a publishing firm of this city, who were under my care some years since, were both obliged to abandon this form of exercise, and substitute riding in an open carriage.

A medical friend, who served during the war in the cavalry, had the curiosity to take an hour's ride in one of the riding schools of this city, and was made sick for a week as the result.

Riding horse-back, like cold bathing, is a delightful luxury for the well, but a powerful medicine for the sick, and, like other powerful medicines, must be prescribed and used with study and discrimination. This same suggestion applies to sea bathing, and to Russian and Turkish baths, gymnastics, and lifting cures.

I emphasize this dark side of a most valuable form of open-air exercise, because it is currently believed that it is a specific for all shapes of nervousness.

Clothing.—The neurasthenic oftentimes need to dress warmer than those in health. Sometimes they must be more careful in this respect than consumptives; not only thick underclothing, but two sets very often barely suffice to keep them comfortable in midwinter. There are some who cannot get warm, no matter how they dress. The neurasthenic cannot be comfortable, unless in a room where the thermometer

registers below 70°, and some require even greater heat. Dr. Richardson, of London, would have the temperature of the rooms of Salut Land uniformly at 60°; in such a city the neurasthenic and nervous Americans in general could never be happy.

The Climatology of Nervous Diseases.—The climatology of consumption has been studied with more or less satisfaction for years. It is a subject that has occupied the thoughts of a large number of observers. The climatology of the diseases of the nervous system has, however, received very little attention, and has, so far as I know, a very meagre literature. There are three general varieties or classes of nervous diseases.

First, purely functional diseases—neuroses as they are called; under this head come neurasthenia and allied disorders.

Secondly, structural or organic nervous diseases, such as paralysis of a central origin, ataxia, progressive muscular atrophy, spinal paralysis of adults and infants, and certain forms of sciatica and tic douloureux.

Thirdly, nervous diseases that are between the functional on the one hand and the organic on the other. Under this head come certain forms of epilepsy and of chorea, possible also tetanus and paralysis dependent on rupture of the blood-vessels of the brain, which are called nervous diseases, although in strictness they are hardly nervous, but vascular diseases, the nerve difficulty that results from them being of a mechanical character. Under this head are also to be included some of the different forms of professional cramp, as writers, telegraphers, musicians, painters, barbers, etc.[1]

[1] On this subject I may refer to my paper, entitled "Analysis of One Hundred and Twenty-five Cases of Writers' Cramp and allied Affections," published in the *Medical Record*, March 15th, 1879.

Very much of false reasoning on the subject—on the history and statistics of nervous diseases—is the result of misconception on this point. Insanity may come under any one of the three orders.

The first proposition in regard to climatology of diseases is this, that all forms of nervous diseases, both structural and functional and also those that partake of the qualities of both, are more common in the temperate regions than in the extremes of heat and cold In the extreme North, in the polar regions, or in the extreme South, in the tropics, nervous diseases are very rare, and the increase in our nervous diseases is demonstrable as we go from the poles towards the temperate zone, or from the tropics northward. In this belt, which includes, in the Eastern continent, a large portion of Germany, Great Britain, and a northern portion of France, and in this continent the north portion of the United States, nervous diseases are found more than in any other part of the world outside of this belt. Northward or southward there are found cases of palsy of cerebral origin, such as I have referred to; and deaths from that cause are frequent, even among the partially civilized. Nervous diseases that are really of a nervous character, the direct results of a disorder of the nervous substance, are comparatively rare, or of far less frequency in Italy, Spain, or in the northern portions of Europe, in Canada, in the Gulf States of America, and in South Amercia, than in this belt that I have just described.

The prime cause of nervous disease is, without any doubt, nervous development and activity; which activity in our higher forms of civilization, especially in modern times, is carried to a degree from which nervous diseases must be the inevitable results.

Secondly. Patients affected with neurasthenia and

allied functional nervous diseases are usually benefited, or liable to be benefited, by visiting the warm regions in this country. In the United States, neurasthenia diminishes in frequency as we go south.

Neurasthenic sufferers who spend a portion of the cold weather in Florida and the Gulf States receive as much benefit, if not more, than consumptives who visit the same localities.

In Europe, cases of similar character are sent to the south of France and Italy and Algeria.

Those who spend a portion of the colder season in those benign climates are profited in various ways; they escape the congestions of the spinal cord that are often brought on and kept up by the cold weather of our northern climates; they escape also the confinement in close and excessively heated rooms, which is absolutely necessary for a number of months in our climate.

The equitable temperature of regions like the Bahamas, Florida, and Nice, makes it possible to spend a large portion of the time in the open air. This change nervous patients appreciate in common with consumptives. Cases of cerebral congestion and exhaustion, of neurasthenia in its different forms, of hay fever, are sometimes permanently cured, and almost always relieved, more or less, by a long residence in a warm climate.

My friend, Dr. W. F. Hutchinson, of Providence, Rhode Island, in an interesting paper, lately published in the *Medical Record*, on "Climate Cure for Nervous Diseases," highly recommends the Sandwich Islands as a resort for the nervous, on account of its equable and agreeable temperature. My friend and classmate, Justice Judd, of the Supreme Court of the Sandwich Islands, tells me that on a visit in the States he

is surprised to hear people so constantly talking about the weather; he says that in the Islands it is expected that the weather will be pleasant. Recently he has heard they have had a cold snap in the neighborhood of 35 or 45 degrees, which has caused great astonishment there. There is little doubt that the Sandwich Islands would be almost an ideal sanitarium for the nerve exhausted. Next to these come, as Dr. Hutchinson recommends, some of the West India islands.

Thirdly. The air of mountainous regions is of special benefit to nervous patients. In elevated regions, the atmosphere is rarer and more free from irritants than at the sea level. A factor of importance, also, is that the temperatures are colder as we go up; the atmosphere contains more of atmospheric electricity, and of ozone; but one-half of the advantages of a residence in mountainous regions is due to the fact that large forests extend in every direction from the mountains; the air of the forests, as the air of the ocean, is pure; all these complex factors contribute to the favorable results that sometimes follow even short visits to a mountainous region, whether that of the White Mountains, the Adirondacks, or the mountains of Switzerland. In very many instances, according to my observation, patients are more benefited by spending summer among the mountains than at the sea-side.

At the sea-side we do not always get the sea air, for when the wind blows from the land, not only is the temperature hot, but the air is laden with the impurities which abound in all cultivated regions. Observations have made clear that in all cultivated districts, the air for hundreds of feet in altitude is filled with vegetable irritants. From these impurities and disturbing influences, the sea and high mountain air is comparatively free. If dwellers by the sea could

always get the sea air in strong doses without the land breezes, they would, no doubt, be benefited far more than is ordinarily the case—perhaps fully as much as by an ocean voyage. It is partly because of this uncertainty of the wind that hay-fever sufferers are benefited in a much larger proportion by a residence in the White Mountain region than at any of our sea-side resorts. I am persuaded that nervous patients are, in very many instances, if not in the majority of instances, more benefited by visits to the White or Adirondack Mountains, or Switzerland, than by a visit to the sea-side.

To this rule there are occasional exceptions. I have seen persons who cannot remain long in Bethlehem, White Mountains, which is perhaps 1,500 or 2,000 feet above the level of the sea, without experiencing headache. I know a man who regularly visits that place, but who also comes away in about a week, for the reason that all the benefit he can derive is over by that time. On the other hand, I know a case of general neuralgia that is always relieved at once on visiting the same region, and the relief abides not only while there, but for a number of months on returning home; and in general it may be stated that functional nervous diseases of all kinds are, as a rule, benefited temporarily and permanently by a visit to that region. Organic nervous troubles are, however, but slightly benefited in comparison. One of the best barometers for change of climate is improvement in sleep. When one sleeps well, it is safe to assume that he has received benefit from the change of climate. This is one of the conspicuous benefits that come from a sea voyage, for those at least who are not annoyed by sea sickness[1] or who have no idiosyncrasy against salt air.

[1] Sea sickness can now in a considerable degree be prevented or controlled. See a monograph by Geo. M. Beard. Published by E. B. Treat, New York.

Fourthly. Mountainous regions above certain altitudes, say about twenty-five hundred or three thousand feet, and between that and six or seven thousand, seem to have an injurious effect on the nervous system. In Colorado, for example, between five and six thousand feet above the level of the sea, there is not, according to the investigations of my friend, Dr. Denison of Denver, as much improvement in nervous symptoms in those who remove to that climate as in those who remove to somewhat lower altitudes; the capacity for continued muscular efforts is not so great as it would be in a denser atmosphere.

The pedestrian feats, of which we now hear so much, could not be accomplished in these high altitudes; and even mental exertion of a higher order would, to the majority of persons, be more fatiguing. In these very high altitudes, there is liability to neuralgias, headaches, and general nervousness.

In the Colorado region, these effects are brought about, not only by altitude, but through the dryness of the atmosphere. Asthma in these regions is almost always relieved, but this is probably due, in part at least, as Dr. Denison observes, to the mechanical effect—"the lessened atmospheric pressure on the respiratory apparatus."

Functional nervous diseases are, on the whole, more common in the Northern and Eastern parts of the United States than in Europe, while in England, Germany, and France, structural nervous diseases are more common than in this country.

We find more of ataxy and muscular atrophy in Great Britain and Central Europe than in any part of America; we find more neurasthenia, hay fever, inebriety, general neuralgia, and nervous dyspepsia in the northern part of the United States than in any part of Europe.

CHAPTER VI.

GENERAL CONSIDERATIONS RELATIVE TO THE ETIOLOGY, PATHOLOGY AND TREATMENT OF NEURASTHENIA.

In no class of diseases are *stereotyped* methods of treatment, either medicinal, electrical or hygienic, of less avail than in the functional neuroses. Every practitioner is liable to fall into certain therapeutic ruts.

No one, for example, doubts the efficacy of the rest cure in many neurasthenic cases, nor can one doubt its inefficient and even injurious effects in many other cases.

Neither rest nor active exercise, nor fasting nor stuffing can be indiscriminately prescribed, with any hope of hitting the mark, except in occasional cases. It is difficult to tell where the nervous condition ends and the toxic begins; to discriminate between cell exhaustion and the irritability that arises from the imperfectly transformed products of digestion. Close observation is required and a careful study, not only of the present condition of the patient, but of his past, his method of life and his heredity. Various conditions again, that we are accustomed to classify as nervous do not in reality come under that head at all, are not due to pathologic changes beginning in the nervous tissues. Hemiplegia, cerebral softening, even chorea and epilepsy in many

instances, do not belong to the true neuroses. The causes are mostly arterial causes. In hemiplegia, especially, it is a question of arteries, and in many choreic and epileptic cases in which the parents have had hemiplegia there is necessarily no nervous diathesis to be taken into consideration. The true unadulterated type of nervous disease is found in those conditions in which there are no arterial causes, and in which the arterial symptoms are of secondary importance and consecutive to nerve derangement.

Under this head we must class neurasthenia, the most important of the functional neuroses.

It is coming more and more to be understood that in dealing with this hydra-headed condition we have to do with a derangement of cellular nutrition from simple exhaustion as positive as, and in the majority of cases perhaps more persistent than when brought about by microbic agencies.

Neurasthenia in its more frequent aspect is simply fatigue—normal fatigue, if you will, carried to excess. Electro-physiologic experiment teaches that if either directly or indirectly we electrically excite a spinal ganglion we get a shrinkage of the nerve cells which continues for many hours, and persistent stimulation may utterly destroy the life of the cell. It is at least rational to suppose that a similar pathologic change in the nerve cell takes place under the stimulation of the varied activities of life, exhaustive mental efforts, and especially the stress and strain of abnormal emotion and early sex-

ual abuse. Normal fatigue in these directions permits a ready recuperation; pathologic fatigue, however, does not permit a ready return of nerve and muscular tone to the normal level, and, when repeated and excessive, results in permanent exhaustion of the nerve cell.

It is a specially significant fact also that after direct stimulation the cell recovers its normal activity and appearance only after long hours of rest—five hours of stimulation producing an exhaustion and change that require twenty-four hours of rest to restore.

Associated with these actual changes in the nerve cells are chemical reactions that add a toxic element to the actual muscular and nervous expenditure of energy. What takes place in nerve cells under artificial stimulation takes place also, in all probability, in greater or less degree in the ordinary activities of one's daily life, and the fatigue of body and mind which follows concentrated or prolonged effort is in the same way dissipated by rest and sleep. This is what it is to be normally fatigued.

Muscular activity through attendant chemical changes, always yields certain noxious products that are both obstructive and destructive, and it is not alone rest and sleep that restore the normal organic tone of mind and body, but also the flow of blood which, while it deposits new material, carries away the waste products which clog and poison the system. A person may be said to be normally fatigued, just so long as complete recuperation follows rest and

sleep. Even where, through electrical stimulation, or by effort of will, the repeated muscular contractions result in such absolute exhaustion that the muscle refuses to respond or responds only imperfectly to artificial stimuli or voluntary effort—it is still only normal fatigue, if through disuse the muscular fibres regain in a few hours or days their usual tone.

In involuntary muscular contractions there is no mental effort, and therefore no fatigue of the central nervous system, but in voluntary muscular effort there is a certain expenditure of energy that fatigues brain as well as muscle. On the other hand, severe mental labor results in a weakening of the inactive muscles—a condition supposed to be due to toxic influences following chemical changes in the brain. It is believed, and this belief is in accordance with accepted physiological principles, that both brain and muscle, when exercised, undergo a regressive metabolism of tissue of an oxidative character. The poisonous material thus set free acts upon the muscles through the circulation and weakens them.

If this voluntary or involuntary stimulation of muscular activity is frequently repeated to the verge of exhaustion, and until the recuperative power fails to bring back the muscular tone to its normal level, we have passed the bounds of normal fatigue. The muscles, or the brain if the strain has been along the line of mental effort, are now suffering from pathological fatigue, a condition in which the

nutrition of the nerve cells is primarily at fault, an unbalanced condition of waste and repair—in other words, neurasthenia. The inanition and auto-intoxication of neurasthenia or pathological fatigue are direct results of those visible changes in nerve cells and the toxic products of exercise which accompany normal fatigue. Overstrain from whatever cause, and the derangement of nutrition initiated and determined by repeated toxic influences, must be accepted as the essential causes and pathological state of the neurasthenic condition.

No consideration of the causes of neurasthenia would, however, be complete without some allusion to the hereditary nature of the complaint. Even where it is not directly hereditary, the neurasthenic ancestry is often found to be decidedly neurotic. The prognosis of hereditary neurasthenia may be said to be both better and worse than that of acquired neurasthenia. It is better because, while the inherited neuropathic condition with its weak powers of resistance is more readily unbalanced by disturbing causes, this disturbance of the nervous equilibrium is less in degree than when the malady is due to constitutional disease and special toxic causes.

In the inherited type of neurasthenia, therefore, the patient often rallies more quickly from depressing influences than in the acquired form, but the prospects for ultimate and complete recovery are not so good.

It has been claimed that those are in error who

hold hat diseases of the nervous system have greatly increased with the development of civilization.

My own very positive conviction, based upon a somewhat extended experience in the treatment of neurasthenic cases, is quite the reverse of this. In hospitals, in dispensaries, and among the very poor everywhere, a typical case of neurasthenia is difficult to find, but among the well-to-do and the intellectual, and especially among those in the professions and in the higher walks of business life, who are in deadly earnest in the race for place and power, this peculiar impoverishment of nerve force that we call neurasthenia appears with alarming frequency. Dr. Brinton says also that civilization, so far from increasing this class of maladies, is one of the most efficient agents in reducing them in number and severity, especially when freed from "religious excitement and competitive anxieties." It is, however, these very "competitive anxieties," so intensified in this country, this worry of business and professional life, that civilization fosters and deepens. American nervousness is indeed a distinctive phrase, and the frequency with which allusion is made to it gives it, in the minds of many, a meaning apart from that ordinarily ascribed to the term. We hear very little of English, French, or German nervousness, and yet in a large record of cases the writer has thus far failed to detect any widely divergent lines of differentiation between the functional nervous manifestations of the differ-

ent nationalities. But while the general characteristics of the nervous temperament are very much the same, whether observed in the English or German, French or American, and while the same general causes underlie each class of cases, it cannot be denied that in America there are climatic conditions and business and social environments to the influence of which the nervous system is peculiarly susceptible, especially if complicated with evil habits, excesses, tobacco, alcohol, worry, or special excitements.

"A man is as old as his arteries," and, barring accidents, it is almost impossible for one to die whose arteries are structurally sound. He who suffers from arterial degeneration may, and usually does, live comfortably and dies suddenly, while the neurasthenic with his healthy arteries lives most uncomfortably and dies slowly. If it were not for one fortunate favoring factor, it might be a question as to the choice of these two conditions. I refer to the incurability of the one and the curability of the other.

Notwithstanding its factor of pathologic fatigue, neurasthenia does not necessarily mean mental exhaustion, for many neurasthenics are capable of sustained intellectual effort. It does not necessarily mean physical exhaustion, for many neurasthenics are equal to sustained physical exertion. It is, indeed, by no means rare to meet neurasthenics who can without distress perform unusual work of brain and body. That one nervously exhausted can still

be equal to severe mental exertion seems to be a contradiction of terms.

If, however, we take into account the reserve forces of the body, we find a partial solution of the problem. The neurasthenic has, to be sure, but a small amount of reserve nerve force as compared with the perfectly strong and healthy man, but what reserve force there is is expended rapidly and vigorously, and results in a more effective and correspondingly larger amount of work. Profound exhaustion may result, but in the same ratio as the expenditure of force is more rapid in the weak than in the strong for the production of the same degree of profound exhaustion, so in the same ratio food and repose renew more rapidly this temporary loss of force in the neurasthenic than in the strong and healthy. This capacity for doing effective and original work and a small amount of nervous reserve force I have in my own experience seen illustrated time and time again, and the history of literature abounds in evidence that much of its best and most original production has been the work of neurasthenics.

But if neurasthenia does not always mean mental and physical exhaustion, it does invariably mean a more or less profound perversion or disturbance of the *morale*, with marked psychical and sensory symptoms.

Now in these cases the question is often asked, "Does electricity do good, and if so, how?"

The neurasthenic appears, as a rule, to be well

nourished. He frequently gains weight; his color is good and his appetite often first class. But is he well nourished? How can he be well nourished with a nervous system so erratic and unstable that the slightest influence, a casual glance even, is sufficient so to disturb the vasomotor equilibrium as to cause a general nervous disturbance, as manifested in the flushed face, perspiring hands, even dizziness and perverted vision?

The neurasthenic is not only not well nourished, in the true sense of perfect nutrition, but there is good reason for believing that he may suffer from toxic influences, which may be both a cause and a result of the undoubted malnutrition of the nerve cells. If there is a disease more aggravating and humiliating to its victim, I have never encountered it. As has been reiterated time and time again, the symptoms are, as a rule, mostly subjective, and to those whose good opinion and sympathy the neurasthenic most covets, he appears too often a living lie; and in my own experience more than one suicide has resulted, not alone because of the suffering from the disease proper, but because of the utter isolation and hopelessness entailed. The first necessary step in the process of relieving a neurasthenic is to gain his confidence, and this you can do only by recognizing his infirmities and treating them with consideration, sympathy and respect. There is no stereotyped method of treatment.

We cannot well get along without judicious medication. The weak and erratic nervous system must

be temporarily sustained and soothed, while the patient is profiting by the slower processes of hygiene and electricity. On some one of the various bromides, including the bromide of zinc cannabis indica, etc., according to individual idiosyncrasies, it has been my habit to rely more confidently than upon most other combinations. But it is to electricity that I turn for the best results that therapeutics is capable of yielding in this tedious, distressing neurosis. If it be true that neurasthenia is a disease of exhaustion, of impaired nutrition, then, theoretically, electricity ought to be of service, since as an aid to nutrition its position is sufficiently assured; and practical experience certainly teaches one that electrization is altogether the most powerful means at our command in the final restoration of perverted cellular nutrition. Experience teaches that there is no other remedy to the effects of which there is a more varying degree of susceptibility, and especially with neurasthenics a well kept record of cases will show a most remarkable variety of conditions.

Consider, for example, the differences in susceptibility to the galvanic current. There are cases in which anything over ten or fifteen milliamperes on any part of the body seems to provoke irritability, while one-half this strength applied to the head becomes decidedly disturbing. On the other hand, there are neurasthenics whose very disease seems to make them equal to the endurance of unusual strength of current, which it is found necessary to decrease as improvement progresses.

These remarks apply to all the other manifestations of electricity. It is impossible always to predict whether it is a faradic or galvanic, or a current of high frequency and enormous potential that yield the greatest satisfaction and the best results. The patient comes to know sometimes, far better than his physician, what agrees and what does not agree with him. If we are wise we will in these cases, like astute political leaders who "keep in the van by recognizing where the people are dimly minded to run," retain the confidence and direction of our patients by quickly divining their well-founded preferences. Among the occasional symptoms associated with the malnutrition of neurasthenia are disturbances of circulation. This instability of the circulation is more especially noticeable in the extremities; they become hot then cold. I have seen cases in which the hands, feet and face under emotional causes changed within a few minutes from normal to marked subnormal heat. This sudden fluctuation results in internal congestion.

The kidneys especially suffer, and I have in my records a number of cases in which albumin and casts have appeared, consecutive to long standing neurasthenia of this type.

I cannot speak too highly of the action of static electricity in these conditions.

The circulation is equalized, and equally as a tonic and sedative its good effects are not slow in manifesting themselves. In connection with prolonged applications of the induction current of

high tension over the kidneys, I have observed in several instances the disappearance from the urine of both albumin and casts. Static electricity, together with other forms of electrization, are more than mere tonics and sedatives. They act as eliminators of poisonous principles. Now I believe that there are forms of neurasthenia and insane conditions in which toxins may enter almost entirely as causative factors. Through poisons circulating in the blood the neurons become affected, and whether the disease be organic or functional is here, as in other conditions, the important question. Neurasthenia is in the majority of cases functional and curable, while insanity is in the majority of cases probably organic and incurable. But insanity is sometimes curable, which suggests a purely functional derangement of the nerve cells, while neurasthenia may be incurable because of a chronic organic condition brought about by toxic causes. If this be true it emphasizes the importance of early treatment.

Not only does electricity directly influence nervous action through the vasomotor system, but it excites vital function by acting directly on the cell itself and on the protoplasm, thus hastening nutritive changes and cellular activity; excretions are stimulated and poisons eliminated. The relation of the electric to the nervous conductibility is of especial interest and importance in the consideration of the causes and characteristics of the functional neuroses. While the electric current and the nerve

current are quite different in their essential characteristics, late researches have shown some very interesting and suggestive points of resemblance. The nerve tracts which were formerly thought to be continuous are now known to be made of independent neurons, along which in their normal condition the nerve waves are propagated, or are arrested if there is a defect of continuity. When the healthy nerve cell receives the stimulus of the nerve, wave energy is liberated, animating and reinforcing the nerve current. In the sick nerve cell, on the contrary, energy is not excited, much less increased. Without this reinforcement as developed in the healthy cell, the nerve wave can make no further progress. In other words, the neuron becomes impervious to it. Pathological conditions show that the conductibility of the neuron may be complete or incomplete according to the degree of permeability of the nervous tract. If the nerve current can pass, it is translated into sensation, movement, intelligence. If it cannot pass, and there are no gross structural changes, we get a variety of the functional neuroses—as hysteria and hysterical anaesthesia and paraplegia, forms of neurasthenia, and mental defects, as shown more especially in confusion of ideas and impaired memory. In order to make clear the striking analogy between the nerve current and the electric current, it will be necessary to refer briefly to a novel and very interesting contrivance called the "coherer," an essential part of the outfit for wireless telegraphy. This coherer is simply a tube of metallic filings. Now, al-

though metal is the best of conductors, yet when it is divided into separate and distinct particles like the filings of iron, the coherer which is made up of these filings becomes non-conducting to a weak current.

If, however, the tube containing the filings is placed in a solenoid through which course currents of high frequency, or in the range of influence of the cathodic ray, the tube immediately becomes a conductor and the current passes; or if it is placed in proximity to a static machine in operation, the electric waves set in motion by the electric sparks strike the coherer and render it immediately a conductor.

It immediately becomes non-conducting again, if subjected to any shock, however slight. These invisible and silent waves of influence nothing can obstruct or deflect, and in the far distance—the limit of which no one can yet say—striking the tube of iron filings, are translated into signs of intelligence. In order to study a phenomenon with advantage it is well to have a theory, and although the theory be defective, it yet gives us a point of departure, leading, it may be, to a clearer conception of the principles involved. This theory, as suggested by M. Branly, to whom we are indebted for this interesting discovery, supposes that each grain is surrounded by a sheath of condensed ether, but not in contact the one with the other. The waves of an electric discharge expand these sheaths of ether, and it is their mutual penetration that changes the tube of

filings from a non-conductor to a conductor. A shock retracts these sheaths and destroys their conductibility. On the other hand, when we study the nervous system on the basis of the neuron theory, we find analogies of the most striking character.

Neuro-motor energy may be developed primarily in the nerve centres, or it may come from without, external physical energy being transformed into reflex nervous energy; in either case it overcomes the natural resistance of the independent neurons, making them conductors of energy in the same way that the electric wave generated at a distance, and striking the disconnected filings of the coherer, overcomes its natural resistance and makes it a conductor. The neuron with its dendrites makes up the central and active part of the nerve cell, the cylinder axis prolongations acting as conductors of the nervous current.

Under the influence of external irritation the dendrites are increased and developed, and the greater the activity of the neuron, the greater the tendency to produce new protoplasmic growths. Does not this harmonize very closely with the working theory in explanation of the action of electricity on the disconnected conductors of the coherer—the expansion and contraction of the ether surrounding each metal particle corresponding to the increase and development or the decrease and obliteration of the protoplasmic prolongations of the cell? The points of contact are broken between the individual neurons, and the nervous wave is arrested in its course.

This theory of the alternating conductibility and non-conductibility of the disconnected conductor termed the coherer, and the theory of the neuron opens up to us not only the possibility of understanding more clearly the gross changes of organic lesions of the brain and the invisible anomalies of structure that we term nutritional, but throws a new and brighter light on the rationale of the well-established value of electricity in the cure of so many functional diseases of the nervous system, and the relief often afforded, even in diseases that are organic and structural.

Reasoning from analogy and the results of physical and physiological experiment, it is natural to conclude that conditions such as hysteria and hysterical anæsthesia and paraplegia, forms of neurasthenia, and various mental conditions, are the derangements in which electricity in some one of its manifestations is specially indicated. But long before we possessed any knowledge of these interesting facts relative to nerve and electric conduction, the clinic had assured us positively and repeatedly of the efficiency of this method of treatment in the functional diseases of the nervous system. One case bearing on this point I beg leave to offer as illustrating not only the analogy between the nervous conductibility and the electric conductibility, but as practical evidence of the power of electricity to restore the conductibility of the neuron that had become resistant to the nerve current.

Such a result as the one about to be related is

sometimes spoken of as one of the brilliant results of electrical treatment. It was a brilliant result only in so far as it was a quick result. Nature was simply reinforced and was enabled to accomplish at once what she was slowly trying to do, and what she would in all probability have succeeded in doing if left to herself.

Miss ——, aged twenty-four years, whom I had treated many times some two years previously for a nervous derangement, and who had in great measure recovered, came under my care again in the autumn of 1899, in a deplorable state of mind and body, the result of a nervous shock in escaping from a burning building. Up to this date she had been for sometime in better health than ever before, but evidences of her hereditary and acquired nervousness, or nervelessness, were never altogether wanting. She suffered more or less at all times from morbid fears, and had formerly been able to take an unusually large quantity of stimulants without appreciable effect.

During the worst periods of her combined hysterical and neurasthenic attacks, an ordinary claret glass of brandy would affect her seemingly no more than so much water.

As her condition improved this insusceptibility became less and less marked, until finally she was influenced by stimulants almost if not quite as readily as others. After the great shock of the fire this craving and remarkable capacity for intoxicants again returned, and was associated with confusion of ideas, impaired memory, partial paraplegia with

anæsthesia, and profound mental depression relieved by violent paroxysms of weeping. Her amnesia was peculiar in that it related to a few things only. Passing events, and the ordinary occurrences of the day were well remembered; but, for example, she claimed to be unable to remember ever having been to my office. I might have ascribed this to caprice, excepting that her mental failure was distinctly pronounced in other ways. Under nerve sedatives she was temporarily quieted, and during the next ten days improved a little, but only a little, in her general and special symptoms, sufficient to be brought to the office in a carriage.

She was immediately placed in what may be termed an electro-static, vibratory field. More specifically she was placed on an insulated stool, and connected with the positive pole of the apparatus. The negative pole was grounded and the spark gap regulated at two inches, giving to the patient vibratory waves very distinct, but altogether agreeable. I lay especial stress on this point. If she had been simply placed on the usual insulated platform and given the ordinary treatment of static electrification, the nerve tracts would not have been influenced by those currents of vibratory, alternating potential that are so essential in restoring conductibility to the "coherer" in the operation of wireless telegraphy to which allusion has been made.

I must not forget to say that the tactile sensibility of the patient was carefully interrogated, but the æsthesiometer proved of little value, since the anæs-

thesia of the tips of the fingers and of the body generally was so profound that the prick of a pin was not felt. Only at the tip of the tongue was there any sensation. Here a prick was felt, but the two points of the æsthesiometer were separately felt only when apart some 3 mm.

A single sèance of fifteen minutes resulted in a very remarkable amelioration of several symptoms, notably of the anæsthesia, and within a week, after three additional treatments, she was able to walk alone with considerable ease. She had quiet, restful nights for the first time since the accident, and arose refreshed and cheerful. Her amnesia quite passed away, the fingers were ordinarily sensitive to touch, and at the tip of the tongue she was able to discriminate the points of the æsthesiometer when but little more than 1 mm. apart.

A most interesting evidence of improvement was the disappearance of desire for and the insusceptibility to stimulants.

As a clinical fact the foregoing case by no means stands alone, and doubtless could be duplicated in its essential features by any neurologist who makes much use of electricity in medicine. Not only have there been many quick recoveries in cases of profound functional nervous disorders by placing patients within the field of the influence of currents of high potential and high frequency, but it is even true that some violent neuro-motor excitation, such, for example, as a sudden fright, anger, and even joy, has restored power to the paralyzed limbs of hys-

lerical patients by overcoming the non-conductibility of the resistant neuron.

In order to explain the sudden change of the coherer, as the tube of iron filings is called, from a non-conductor to a conductor, recourse was had to the theory of a sheath of ether surrounding each particle, whose alternate expansion and contraction under electric influence and shock changed entirely its power of conduction. In dealing, however, with the relation of electric energy and shock to the nervous system, we find in the physiology and minute anatomy of its structure a basis of knowledge rather than theory. We are told that the nervous system is composed of independent neurons, and that the connection between them is made by simple contact of the cylinder axis of one neuron with the protoplasmic prolongation of another.

The readiness with which the nervous current flows, translating itself into sensation, movement, and intelligence, depends upon the functional integrity of the neuron and the perfection of its collateral connections. The contact between the dendrites of one neuron with the protoplasmic prolongations of another must not only be constant, but must be constantly changing in order to make a way for new ideas and new impressions. In the normal condition of mind and body there is no severance between the dendrites and cylinder-axis fibres, but in impairment of the psychic function, whether it registers itself in the domain of sensation, movement, or intelligence, or in all these, as in the

case just related, these ties or points of contact become impaired or altogether broken.

As to the underlying causative factor in the field of the functional neuroses, we can arrive at but one conclusion, namely, that it is an impairment or interruption of the potential energy of the cell life.

CHAPTER VII.

THE NEURON THEORY IN ITS RELATION TO THE TREATMENT OF NEURASTHENIA.

It is a growing, if, indeed, it is not a well-established, conviction that in the management of neurasthenia physical and psychical methods are of far greater value than the administration of drugs.

But if physical and psychical methods of treatment are to gain in stability and professional confidence, intelligent expression must be given to the reasons that underly results. To those directly and experimentally interested the proofs of the therapeutic properties of such methods are sufficiently convincing; but to those not so directly interested the iteration of a long list of "local marvels" is apt to become a bit tiresome, and, if not well and satisfactorily authenticated, will be received with a proper measure of credulity. So far as physical methods relate to nervous diseases, it will not be disputed that it is in the functional neuroses, so-called, that we find their greatest efficacy.

Organic and structural diseases receive from their use, as a rule, benefits that are but slight and palliative, but in such conditions, as hysteria, neurasthenia and many psychical states that have not crossed the border-line of insanity, their value cannot be gain-

said. The cause of these beneficial results has in the past been referred, in a general way, to nutritional influences, to circulatory and secretory changes, but there seemed to be no satisfactory anatomical or physiological data to account for the undoubted physical changes necessarily underlying the onset of the nervous symptoms or to explain the rationale of either physical or psychical methods of treatment. We have now, however, in the neuron doctrine and associated theories many plausible suggestions as to the rationale of treatment. If, therefore, the neuron theory is correct, if the nerve cell, with its multifarious prolongations, is an anatomical unity, and is in association with its fellows by contiguity only, and not by continuity, old ideas of the physiology of nervous activity must undergo very radical changes. I do not forget that more recent researches have distinctly modified the neuron doctrine. The concept of the nerve cell, however, as a functional unit, must still prevail, as affording the most rational basis in the consideration of the action of nerve force. If, in addition to this theory of structural isolation, we accept as true the theory of amœbic movements—in other words, the power of the neuron to swell and retract by means of its protoplasmic prolongations—we get still clearer conceptions of the cause and cure of a multitude of nervous conditions. Doubtless this power of independent movement of the neuron, or what has been termed the retraction theory, has not yet been proven, and may not be

susceptible of proof; still the facts of psychopathology not only render such a physiological process exceedingly probable but also quite necessary to a satisfactory explanation of mental abnormalities and sudden and transient alterations of sensation and motility. In saying that the central nervous system can no longer be regarded as made up of continuous lines or threads of nervous substance, consisting rather of innumerable units, each one of which is complete in itself and absolutely isolated the one from the other, it is not to be understood that there is no connection between them. This connection is, indeed, most intimate and complex, and may become closer or entirely broken through many causes. All thought processes, the exercise of the passions—fear, joy, hate, sorrow, nervous shock of whatever kind—interfere either for good or evil with this complex system of connections between neuron and neuron. Indeed, the explanation of all mental phenomena, normal and abnormal, resolves itself into a question of connections, and should go far to do away with the term functional, by demonstrating that all abnormal functioning of an organ is due to material changes of greater or lesser degree. We say that the nervous impulses are transmitted from neuron to neuron through simple contact alone, and that this contact is complete, incomplete, or entirely broken according to the activity of the amœboid movements.

These amœboid movements, these retractions of the protoplasmic prolongations of the neuron, whether

they be slight or profound, transient or permanent, constitute veritable structural changes, and the difference between a momentary forgetfulness and a permanent amnesia, between a transient paralysis and an incurable hemiplegia is simply a difference of degree. In either case the nerve impulses are arrested in their course. In the one instance, as in a case of hysterical paralysis, by a defect of contiguity due to slight and transient causes that are readily overcome by some external reinforcement of the nerve wave; in the second by a similar defect of contiguity due to permanent pressure and destruction of nerve units. Admitting, then, that the functional neuroses, as we must still designate them —the hysterias, the neurasthenias—the innumerable grades of abnormal mentality that have not yet crossed the border-line separating them from the profoundly or hopelessly insane, are due to amœbic movements of the protoplasmic prolongations, resulting in their retraction and consequent dissociation of neuron from neuron, or, to use a surgical phrase, a practical solution of continuity in the neuron chain, it behooves us to inquire into their causation and into the rationale of the physical and psychical methods of treatment that have been found to be of value.

An inquiry into the etiology of nervous diseases opens up the whole field of heredity, and the question to what extent one's nervous defects are inherited or acquired are of intense interest, but can be

alluded to here only in a general way. An hereditary want of stability of the neuron, with its innumerable protoplasmic extensions, is, in the vast majority of cases, without doubt, the fundamental causative factor of abnormal mental phenomena. The majority of neurasthenics who have come under my observation have giveu an hereditary neuropathic history distinctly bad. When the nervous system of a man hereditarily strong succumbs to the stress and strain of dissipation, or work, or both combined, it is only after repeated and prolonged assaults. The young man rejoicing in a constitution inherently strong makes the great mistake of regarding it as impregnable. It may be a veritable fortress, but nature's reprisals are inevitable, and sooner or later, under repeated assaults, it will give way as surely as in the case of his more unfortunate brother with his inherited neurotic instability. Those who belong to the class of the hereditarily weak may, under favoring circumstances, go through life without manifesting serious nervous symptoms, but such cases of exemption are rare.

Every individual must meet conditions that try his mental serenity and test his physical forces, and the nervously unstable rarely emerge from the contest unscathed. The questiou of functional nervous disease is very much oue of neuron euergy. The delicacy and susceptibility of the neuron body must be simply marvellous, yet its vitality is great, and in vigorous constitutions, it has power not only

strongly to resist exhaustive influences, but, even when those influences prevail, has inherent power of rapid recuperation after the disappearance of the exciting cause. These exciting causes, unquestionably the same in the hereditary and acquired neuroses, are, broadly speaking, two—namely, fatigue and autotoxis. As to the relative importance of these two provocative causes, who can say? Both are accompaniments of civilization, especially the former, and the higher the civilization the greater the ravages of fatigue. There is, moreover, no definite line of demarcation enabling us to say that in this case the results are due to fatigue and in that to autotoxis. Fatigue in itself brings autotoxis and autotoxis fatigue, but primarily the pathologic changes are due to one or the other.

It is not alone, nor principally, muscular fatigue from over-exertion, nor mental fatigue from over-intellectual strain, that is meant when speaking of fatigue as the cause of neural disease.

Psychic excitation, when repeated and prolonged, is to the last degree destructive to mental and physical stability. Excessive and long-continued mental effort is undoubtedly responsible for many cases of nervous breakdown. If to this is added the strain of continual worry, the danger is materially increased; but these combined agencies, so inimical to the normal functioning of the pyramidal or psychic cells of the cortex, cannot be compared in deadly energy to the constant impact upon the nerve units

of unbridled and unlicensed sexual freedom. As before remarked, all thought processes and all emotional activities disturb for good or evil the functional activity of the psychic cells. Without such disturbances, indeed, there could be no progression of the intellectual life. "The solitude and dead-level existence in sparsely-settled rural communities are well-recognized examples of the dwarfing influences of intellectual and emotional stagnation. These depressing environments, while enervating the mental and ethical, tend to quicken and stimulate as well as to pervert the animal instincts. As a result, crime is more brutal, feuds more revengeful, and for more trifling causes, and insanity more prevalent than in towns and cities."

The functional hyperemia resulting from the exercise of the intellectual forces is a veritable fertilizer, reinforcing the molecular vibration, helping the nutrition of the neuron, and, by increasing the number of contacts, of the dendrite with the cylinder axis prolongation, developing new paths for the transmission of the nervous current. But let this process be repeated time after time, year in and year out, through unnatural or, at least, abnormal exercises, malnutrition and exhaustion of the neuron must inevitably follow. The protoplasmic portion of the neuron then retracts (that is the theory) with its resultant solution of physiological continuity, indicating that its vitality is impaired.

As to the toxic origin of nervous diseases, it is be-

coming more and more evident, through the revelations of physiological chemistry and bacteriology, that it is a most important etiological factor, and a more general recognition of this fact would, I am confident, do much toward the initiation of better therapeutic methods. It may be safely asserted that a large proportion of all aches and pains and abnormal mental phenomena are due directly or indirectly to the imperfectly transformed products of digestion.

Mankind is stupid in many directions, but its stupidity in the direction of eating and drinking passes comprehension, and has given rise to the saying that "gluttony kills more people than intemperance." For one case of insanity or neurasthenia, with their profound and varying conditions of mental and physical derangement, there are thousands of cases of transient but ever-recurring disturbances of mind and body due to toxic causes.

Man habitually overeats, and the resultant end products cause, by their irritation, a long train of familiar symptoms—heaviness of head, dullness of intellect, vertigo, confusion of ideas, cold extremities, etc.

It is not, then, a cause of surprise that the physiological functions of the body are so frequently disturbed by autoinfection. When one considers the chemical complexity of the human economy, and how tissue metabolism is subject to hindrance and derangement because of disturbed digestive pro-

cesses, incomplete oxidation, and imperfect elimination of waste material, it is rather a cause of wonder to see how much harmonious action there is in the complicated mechanism of the living body. Our knowledge of autotoxis as a cause of mental and nervous disease is enlarged because of the microscope and physiological chemistry, and it is believed that by urinary analysis the special organ at fault can be designated. Gastrointestinal intoxication shows itself by the presence of indican, of acetone, of diacetic and oxybutric acids, and of tyrasine in the urine. Hepatic intoxication manifests itself by hemapheisme urobilinuria, albuminuria; renal autointoxication, by the quantity of urine, casts, albuminuria, hemoglobinuria. Clinical experience, will, I think, confirm the statement that mental and nervous symptoms due to autointoxication differ from those due primarily to fatigue. One of the most striking differences between neurasthenia from fatigue and neurasthenia from autoinfection is the mental confusion characteristic of the latter. It is probable that this confusion of thought is almost universally the result of autointoxication and peculiar to it. How many times, in neurasthenic cases from overstrain, have I seen temporarily this added symptom of confusion, due, unmistakably, to toxic influences.

The character of the mental phenomena in toxic and non-toxic neurasthenia differs, according to my experience, in one other important respect. In both

forms we find depression and a profound sense of misery, but in the non-toxic form the irritability is not so extreme, nor do we see such unreasonable outbursts of temper as in cases in which the nerve cells are actually poisoned by imperfectly transformed products. In considering the agencies of autotoxis and fatigue that pervert the normal functioning of the nerve cells, the great susceptibility of the neuron to traumatic agencies should not be forgotten.

The persistency and severity of neurasthenic symptoms, due to external mechanical agencies, are well known and have been widely discussed. Traumatic neurasthenia is expressed in symptoms more profound and lasting than in most other forms. The construction of the highly-organized ganglion cells is wondrously complicated and delicate as compared with the cells of the tissues of the body in general.

Its metabolism, therefore, suffers especial disturbance from external shock, which, in all probability, leads more readily to actual parenchymatous degeneration than disturbances from fatigue or ordinary toxic causes.

In briefly discussing the rationale of physical and psychical methods of treatment as related to the neuron theory, I shall speak more especially of electricity in referring to the former, both because there is a unique and striking analogy between the nervous and electric conductibility, and for the reason that

it is with the action of this agent I am most familiar. In dealing with electricity as a physical agent, I propose also to consider it as a psychical agent, for I am quite free to admit that some of the good derived from electrical methods of treatment are due to psychical influences. No less an authority than Moebius claimed that three-fourths of the cures sequent to electrical treatment were due to mental impressions.

However this may be, whether the proportion of cures attributed to psychic influences be too large or too small, the fact of its psychical effect is surely no bar to its use. It is, on the contrary, an additional testimony to its value.

Not only every physical method, but the administration of all drugs as well, have their psychical side; and if electricity appeals to the imagination with especial power, so much the better. We know that peripheral stimulation as manifested through the senses—the stimulation of thought, of hearing, of sight, as well as the stimulation born of the emotional elements of our nature—are important forces in the normal development of the psychic cells of the cortex. In equal degree, and perhaps in the same way, when the function of the neuron becomes impaired, its restoration not infrequently depends in no small measure on those self-same methods of stimulation, sometimes with and sometimes without conscious effort on the part of the patient. I cannot better, if as well, express the importance of psycho-

therapy in therapeutics, and of the relation of it to electrical methods, than by a quotation:

"Let us now only recall two indisputable facts. First, that psychotherapy, no matter in what form applied, may be of benefit in all diseases that have primarily originated through psychic processes; and, secondly, that the action of psychic processes easily oversteps the psychic boundaries and trespasses on the physical sphere, producing not only functional disturbances, but also structural changes in many organs. In fact, Von Strumpell is right when he says that the number of apparently physical diseases caused by primary psychic processes is at least quite as large as the number of actual primary physical states of disease. Electricity as a purveyor of suggestions is unsurpassed, and I know of no other means by which beneficial results can be obtained with so great certainty and rapidity in affections superinduced by psychic action.

"If to the psychic action that electricity exerts, and to the facility with which it can be made use of as the carrier of intended suggestion, we add its other possible modes of action, we certainly find therein a remedy whose field of influence is not surpassed by any other single method of treatment.

"These conclusions, theoretically plausible, stand in full accord with the empirically-acquired knowledge of physicians of the largest practical familiarity with disease and with electrical treatment, and who are deserving of credence as scientific observers."

That electricity does possess, aside from its psychic influence, very positive physical effects over diseased conditions will be readily admitted by every unprejudiced mind. Even Moebius, whose dest uctive criticism has in reality done much to clear the atmosphere of electrotherapeutics, practically admits that a very respectable proportion of the cures effected by electricity are due to actual physical influences.

The mechanical, chemical, cataphoric and electrotonic action of electricity are far more in evidence than its psychic or suggestive action. Much of this physical energy is, in truth, mathematically demonstrable, while psychical effects are more a matter of observation and deduction.

The influence of electricity on the neuron must be in the main mechanical, or electrotonic, for the action of any of its manifestations upon the nerve tissue excites in that nerve a condition of electrotonos, or, in other words, a change in its excitability. To thus influence the protoplasmic portion of the neuron, to heighten its activity and hasten the development of new paths for the transmission of nervous impulses, the surging, vibratory effects of currents of high potential and frequency seem particularly adapted. The greater the number of ties or connections developing out of the protoplasmic body, the richer and more substantial becomes the mentality of the individual. These ties or connections are multiplied and strengthened through emo-

tional (psychical) influences. The natural and incessant molecular vibrations of the nerve elements, thus reinforced by artificial aids, open up new paths of conduction for the transmission of the nervous waves, the obstruction of which give rise to so many symptoms of disease. Whether this molecular influence is exerted through psychical or physical force, it is, in either case, a question of dynamics, the difference being that the dynamics of electricity is far more potential and exact than that of the emotions. The value of physical methods of treatment in the functional neuroses, and even in structural changes—in hysterias, hysterical anæsthesias and paraplegias, neurasthenias and various mental conditions—has been so frequently demonstrated that further illustrative cases seem unnecessary. The rationale of this power lies, in great measure, I believe, in its ability to restore the conductibility of the neuron that has become resistant to the nerve current. The inherent energy of the nerve cells is liberated, new paths of conduction form, resulting in modification of both motor and sensory process.

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